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INSIGHT

The global infrastructure magazine / Issue No. 7 / 2015

Who controls our infrastructure?

With a special feature on

The global rail sector

KPMG
cutting through complexity

Foreword

Clearly, private participation in infrastructure is a good – and entirely necessary – trend. And, given the existing infrastructure gap evident around the world, it also seems fairly clear that governments and public infrastructure authorities are going to need a lot more private participation in the future.

But as the private sector takes on an increasing role in the delivery, funding and operation of our infrastructure, new and complex questions are starting to emerge. Who exactly controls our infrastructure? What role can and should government play in the delivery of assets and services? What will be the eventual impact of private participation on consumers and users?

These are not easy questions to answer and much will depend on the specific social, economic and political realities of each market. What is clear, however, is that the shift of control towards the private sector is creating new challenges and complexities for infrastructure authorities, governments,

regulators and investors around the world. For private participation to grow, answers will be needed.

That is why, for this edition of *Insight Magazine*, we asked our global network of infrastructure professionals to sit down with the world's operators, owners, investors and regulators to explore some of the big challenges and trends influencing the debate around control.

The insights and opinions that these leaders shared with us paint an optimistic picture. Many seem to believe that concerns related to control will quickly fall away as governments and infrastructure users gain more experience with privately-delivered and operated infrastructure. Others suggest that the issues can largely be solved through regulation and deal structuring.

At KPMG, we believe it will take more than creating new legal structures and building consumer trust to put concerns related to control to rest; it will require a fundamental rethink of the relationship between consumers, infrastructure and government. And that, in turn, will require another shift in the relationship between the private and the public sectors.

This edition of *Insight Magazine* also includes our *Special Report on Rail*, a sector that is often at the epicenter of the debate around control. As governments increasingly start to recognize the symbiotic relationship between rail and economic growth, our *Special Report* examines the key trends and challenges influencing the sector, from asset management and operational efficiency through to alternative funding models and cyber-security.

To round out our publication, we have also included a number of timely and topical viewpoints and interviews that touch on key issues for the infrastructure sector including a review of our Emerging Trends in Infrastructure for 2015, an update on the Asia Infrastructure Investment Bank and a look at PPP structures in the healthcare sector.

On behalf of the contributing authors and KPMG's global network of Infrastructure professionals, we would like to thank those leaders who shared their experiences and insights for this publication. We firmly believe that – through publications such as this – we can continue to work together as a sector to solve some of the greatest challenges facing the world today.

We hope that this edition of *Insight Magazine* furthers the debate on the control of infrastructure and helps governments, operators, owners and investors to rethink the way infrastructure is delivered, managed and controlled. To explore these ideas and concepts further, we welcome you to contact your local KPMG member firm or any of the authors who contributed to this publication.

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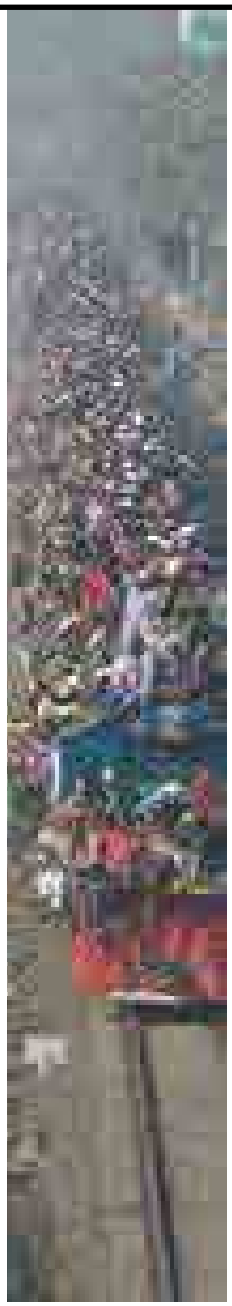

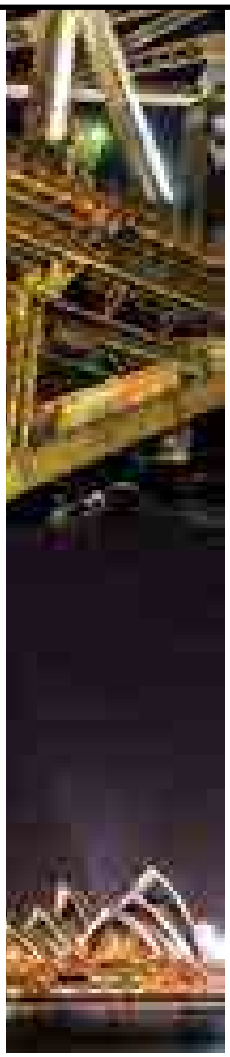

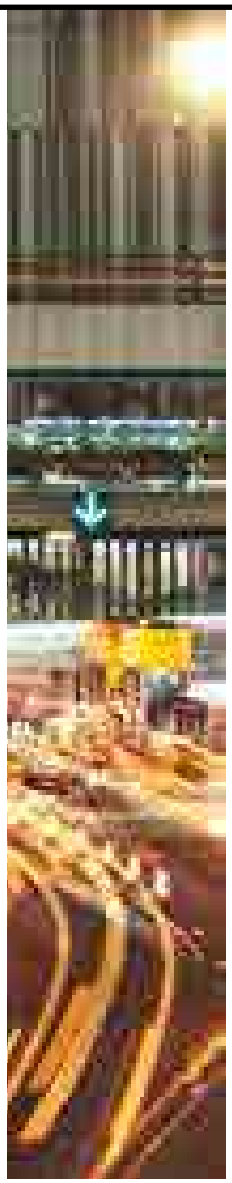

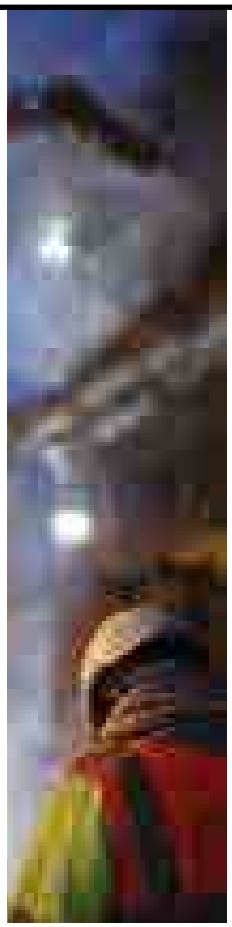

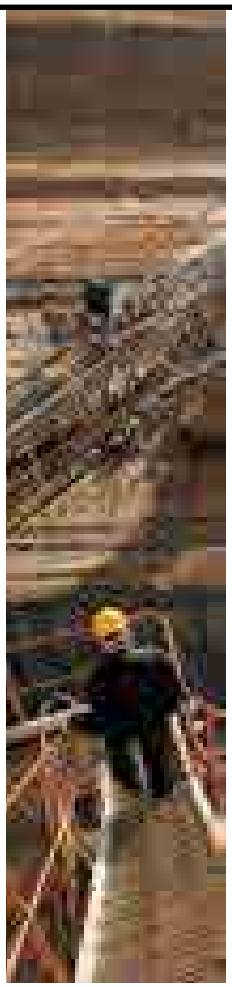

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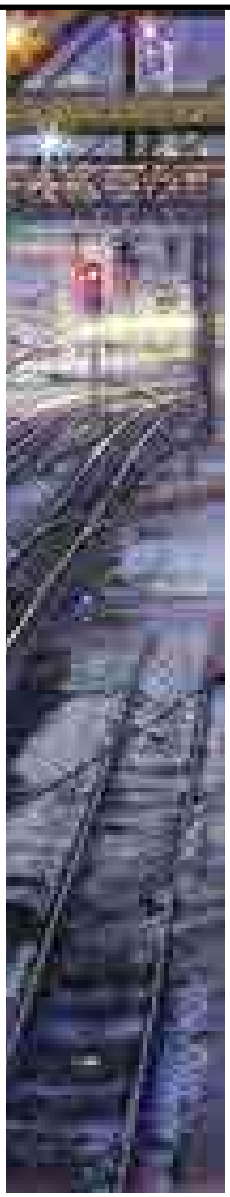
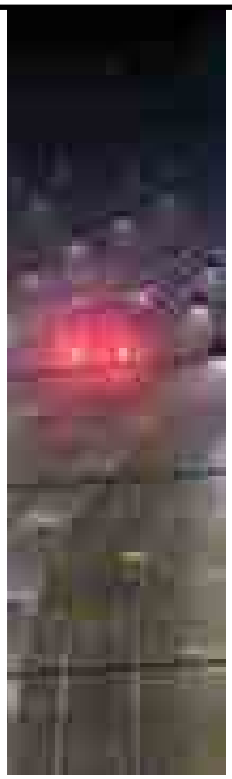
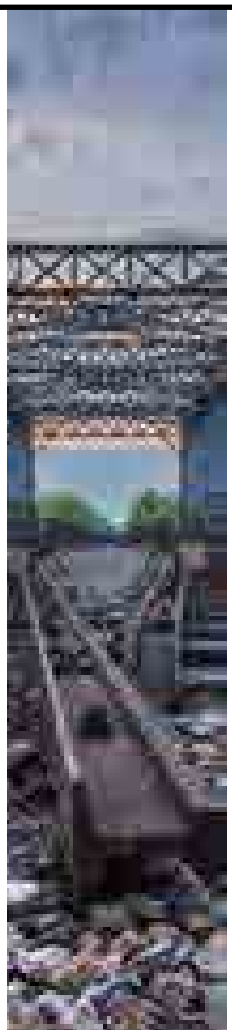
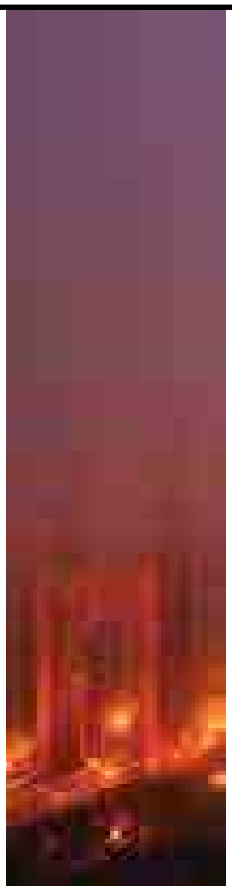
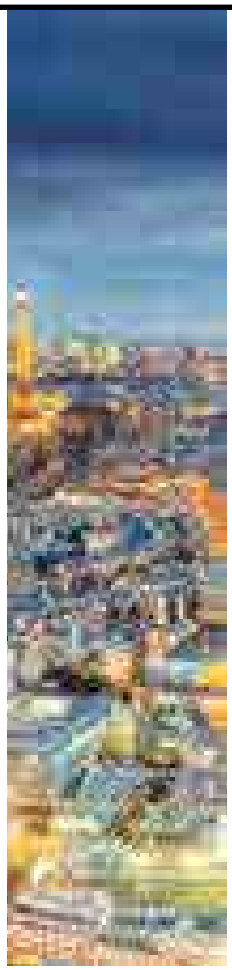






Insights





Around the world in infrastructure

ASPAC

Hong Kong

Hong Kong moves forward with new 'Cultural District'

Supported by a HKD21.6 billion (US$2.8 billion) endowment from the Hong Kong Government in 2008, construction is now underway on the first phase of the West Kowloon Cultural District. The plan envisions creating one of the world's largest cultural quarters on a dramatic harbor-front site in the heart of Hong Kong, in part through the development of 17 new arts venues spread across a 40-hectare site. The development will take place in three stages with the first facility – the Xiqu Centre – expected to be complete in 2017.[1]

New sports complex to start 'advance works'

Hong Kong's Home Affairs Bureau (HAB) has appointed an operations consultant to help progress plans for the Kai Tak Multi-purpose Sports Complex (MPSC). First announced in 2007, the project was raised in the Chief Executive's 2015 Policy Address as a key priority for the HAB. The facilities, which will include a main stadium with at least 50,000 seats, an indoor sports arena and a public sports ground, will be located in a park setting together with commercial space, offices and possibly hotel accommodation. Situated at the eastern end of Victoria Harbour, the current plan anticipates construction to be completed in 2020/2021.[2]

India

Building roads to build the economy

India's government has fast-tracked Prime Minister Modi's ambitious Bharat Mala project. The US$10 billion plan envisions the development of a road stretching right across India's vast west-east land border. Based on a recent assessment of the existing road network, government officials estimate that the project will require approximately 5,300 kilometers of new roads and more than 100 bridges. Modi's government hopes that the roads will have a strong economic impact, particularly in poorer border states and will help promote trade. The project is expected to be completed within 5 years of breaking ground.[3]

Singapore

Capacity expansions at Singapore's Changi Airport

The next phase of development is progressing at Singapore's Changi Airport with soil improvement works underway at the planned Terminal 5 'mega-terminal' on the 1,080-hectare site. The airport plans to also expand capacity by implementing a three-runway system (using an existing military runway) and by building almost 40 kilometers of new taxiways. The project, which is progressing at the same time as the construction of the new Terminal 4 building and the expansion of the existing Terminal 1 building, will see annual handling capacity increase from 66 to 135 million passengers per annum by the mid-2020s.[4]

Indonesia

Bidders wanted for Indonesia IPP

A Request for Qualification process is underway for the 1,600 megawatt Java 1 gas-fired IPP in West Java. While the state-owned utility, Perusahaan Listrik Negara (PLN), is tendering the Java 1 Independent Power Producer (IPP) project without government guarantees for the Power Purchase Agreement, the project looks set to attract participation from several multilateral banks. However, domestic gas constraints mean that sponsors will need to develop a gas procurement strategy using liquefied natural gas (LNG) which may dampen interest in the project somewhat. The Java 1 project is part of Indonesia's larger plan to increase power generation capacity by 35 gigawatts within the next 5 years.[5]

Australia

Brookfield Infrastructure expands portfolio with Asciano purchase

Adding to their existing transport portfolio of railroads, roads and ports, Brookfield Infrastructure is now creating one of the world's leading rail, port and logistics businesses with the proposed acquisition of Australia's Asciano. Valuing the company at US$8.8 billion, the purchase provides Brookfield with a network of assets including container terminal operations in a number of major Australian cities; new port, terminal and supply chain services; and an Australia-wide rail haulage operation consisting of more than 660 locomotives and 14,000 wagons capable of hauling 180 million tons of freight. Asciano shareholders are expected to approve the proposal in mid-November 2015.[6]

NORTH AMERICA

US

Building bridges with PPP

Pennsylvania is moving forward with a massive public-private partnership (PPP) program to replace 558 of the state's structurally deficient bridges as part of their Rapid Bridge Replacement project. The contract – worth US$899 million – was awarded to a single consortium (PWKP) who will also be responsible for maintenance of the bridges for 25 years following construction. According to PennDOT, the PPP process should deliver each bridge at an average cost of around US$16 million, versus the US$2 million average cost typical of traditional bridge procurement models. The project is widely viewed as a test of the state's fledgling PPP program.[7,8]

He shoots, he scores

The procurement process to select a private sector partner for the new Gordie Howe International Bridge (named after a legendary Canadian hockey player who played 25 years for Detroit) is on. In May, the Windsor-Detroit Bridge Authority announced the Request for Qualifications, kicking off an 18-month procurement process. The estimated US$2.1 billion project will feature a total of six lanes, associated border inspection plazas, and direct connections to Highway 401 in Ontario and Interstate 75 in Michigan, a major trade route in North America. The Canadian government has already earmarked more than US$400 million to the Bridge Authority to advance early work and land acquisition.[9,10]

Canada

A new hydro powerhouse

Work is underway on a 824 MW hydroelectric generating facility at Muskrat Falls in Labrador, Canada. The facility, which consists of two dams and a powerhouse, will be the second-largest hydroelectric facility (behind the Churchill Falls facility) in the province of Newfoundland and Labrador and will boast the highest turbine efficiency in North America. Under the terms of an agreement between Newfoundland and Labrador's Nalcor Energy (a crown corporation) and Halifax-based Emera to develop Phase 1 of the Lower Churchill Project, Nalcor will design and build the hydroelectric power station at Muskrat Falls and a HVdc transmission line called the Labrador-Island Link from Muskrat Falls to Soldiers Pond on the Avalon Peninsula. Emera will build

Source:

[1] http://www.westkowloon.hk/en

[2] http://www.hab.gov.hk/en/policy_responsibilities/Recreation_Sport_and_Entertainment_Licensing/mpsc.htm

[3] http://www.btvin.com/article/read/news/2238/exclusive---pm-to-review-highway-building--bharat-mala-on-aug-6

[4] http://www.news.gov.sg/public/sgpc/en/media_releases/agencies/mot/press_release/P-20130830-2/AttachmentPar/0/file/C2036%20Media%20Release%20(media).pdf

[5] http://www.rambuenergy.com/2015/05/pln-launches-prequalification-for-3-gas-and-coal-fired-power-plant-projects/

[6] http://www.bloomberg.com/news/articles/2015-08-17/brookfield-infrastructure-buys-asciano-in-8-8-bln-deal

[7] http://planphilly.com/articles/2015/01/13/p3-project-to-replace-558-penndot-bridges-starting-this-summer

[8] http://parapidbridges.com/whatisthepennsylvaniarbrproject.html

[9] http://www.cbc.ca/news/canada/windsor/gordie-howe-international-bridge-to-connect-windsor-and-detroit-1.3074243

[10] http://www.cbc.ca/news/canada/windsor/gordie-howe-international-bridge-request-for-qualifications-issued-1.3160249

[11] http://www.cbj.ca/muskrat_falls_hydro_electric_power_project/

an electrical interconnection called the Maritime Link between the islands of Newfoundland and Cape Breton, Nova Scotia, and invest in the Labrador-Island Link such that Emera's total investment in both the Maritime Link and Labrador-Island Link is less than 49% of the cost of the transmission infrastructure included in Phase 1 of the Lower Churchill Project. Nalcor Energy will provide approximately one terawatt-hour of electricity to Emera each year for 35 years in exchange for transmission rights on the Maritime Link and ownership of the Maritime Link at the end of the 35-year term.[11]

A new model emerges

In June 2015, the Québec National Assembly passed Bill 38, effectively approving the creation of Caisse de Dépôt et Placement du Québec's (CDPQ) Infra unit. Under the new model, CDPQ Infra will have an option to undertake several aspects of the lifecycle of projects submitted for evaluation by the Quebec government, including project planning, financing, development and operation. The first two projects to come under the arrangement are expected to be a set of greenfield public transit systems valued at US$4 billion.[12]

Go-ahead for underground mine at Voisey's Bay

Vale, the owner of the Voisey's Bay nickel-copper-cobalt mine in northern Labrador, has announced that it will pursue underground mining once the open pit is exhausted in 2020. Initial work on the underground program will start next year and, once fully operational, is expected to add more than 400 new full time jobs. The decision to go underground at Voisey's is likely influenced by Vale's desire to ensure a steady feed of nickel concentrate to their new US$4.3-billion Long Harbour Processing Plant (LHPP) which, while more than 1,000 kilometers away from the mine, is seen as a vital part of the integrated operation.[13]

SmartTrack on track

Toronto's plan to develop a Regional Express Rail surface service is slowly moving ahead. The 7-year, CAD8 billion (US$6 billion) project is expected to provide service from the airport in the west, through the downtown core, and out to the northeast suburbs of Markham. When completed, the line is expected to have 22 new station stops and five interchanges with the existing TTC rapid transit network. Part of the funding for the program is expected to be provided by the province's regional express rail plan, but the project will require an additional CAD5.2 billion (US$3.9 billion) in funding from the city and federal government to get off the ground.[14,15]

Vancouver says no to tax-for-infrastructure proposal

Citizens of Metro Vancouver voted against a proposal to implement a 0.5 percent increase in sales tax in order to improve transportation infrastructure and public transit services in the metro Vancouver area. With voters almost two-to-one against the proposal, the scuttled plan has put a number of much-needed projects into question including new subways for Vancouver, new regional lines and rolling stock, a 25-percent increase in bus service and more than 2,700 kilometers of enhanced bikeways. The vote, which was conducted via mail-in ballot, saw participation rates of below 50 percent and was positioned as a non-binding plebiscite.[16]

Mexico

Mexico's ambitious reforms agenda

Mexico's government certainly seems determined to bring private investors into their infrastructure market. Last year's announcement of the National Infrastructure Program 2014-2018 brought almost 750 programs onto the market, with an estimated total value of around US$590 billion. Some of the landmark projects include a 1,000 kilometer gas pipeline, Mexico City's new airport, high-speed and urban rail developments and nationwide fiber optic cable networks. More recently, the government pushed ahead with its initial oil and gas auction, allowing private and foreign investment into the sector for the first time in more than 80 years. While the auction failed to meet expectations, it did demonstrate that Mexico is moving in the right direction.[17]

Brazil

Brazil looks to restore confidence

After a shaky start to the year, Brazil's government is actively working to encourage greater international participation in the country's infrastructure and construction sectors. A new infrastructure program, valued at approximately US$64 billion, does more than simply outline the basket of projects that Brazil needs (everything from roads and railways to ports and airports) it also shows that the government is committed to addressing some of the past concerns voiced by international players. Indeed, in comparison to the infrastructure plan outlined in 2012, this program includes a raft of changes including reduced subsidized credit levels, eased restrictions on profits and more time for contractors to prepare bids.[18]

EUROPE

Keeping up momentum on HS2

Recognizing that the delivery of the UK's planned High Speed Rail 2 (HS2) scheme may outstrip contractor capabilities, HS2 has announced that it is moving ahead with the tender process – at least a year ahead of receiving Royal Assent – to allow contractors and partners to invest in recruitment, training and education ahead of the project start. Contracts for an engineering delivery partner (worth up to GBP500 million) and for enabling works (expected to be worth approximately GBP900 million) will be among the first to be tendered. At least eight consortiums are expected to compete for the first phase of the project.[19]

Heathrow wins latest fight for airport expansion

With the Davies Commission's final report now public, plans are being developed to build a new 3,500 meter 'third runway' about 3 kilometers north of the existing airport. While the cost of the expansion – estimated at GBP18.6 billion – will be raised privately, plans also call for part of the M25 motorway to be put into an underground tunnel and for existing roads to be expanded, works that some analysts suggest will cost taxpayers around GBP5.7 billion. Heathrow is one of the world's busiest airports, handling 73.4 million passengers in 2014, but currently operates at 98 percent capacity.[20]

AFRICA

LAPSSET gets an international funding boost

The US has offered to invest more than US$9 billion into the Lamu Port South Sudan Ethiopia Transport corridor (or LAPSSET), a transformative transportation corridor project underway in East Africa. The initiative, which aims to build and link new ports and airports in Kenya to markets in South Sudan and Ethiopia, is made up of eight projects – including a 32-berth port, an international airport, new resort cities, a dam project, crude oil pipelines, and railway and highway networks – worth an estimated US$26 billion. The timing of the US announcement (just months before a visit to the project by a high-level Chinese delegation) suggests that the US wants to take a larger role in the continent.[21]

Medupi power station comes to life

Medupi, the world's largest dry-cooled power station comprises 6 units with a total output of 4800 megawatts. Construction began in 2007 and in August 2015, the first of six units was completed and officially handed over to the utility provider Eskom bringing an additional 794 megawatts of permanently available power to the system. South Africa suffers a 2,000 megawatt energy shortfall during periods of peak demand, so the addition of this extra capacity will help considerably in reducing the need for load shedding. Completion of all six units will be progressive through to final completion in 2019.

Source:

[12] http://www.infra-americas.com/print/1571791/how-cdpq-could-revolutionize-greenfield-infrastructure-investment/

[13] http://www.northernminer.com/news/vale-green-lights-underground-mine-at-voiseys-bay/1003700730/

[14] http://www.thestar.com/news/gta/transportation/2015/04/16/premier-moves-torys-smarttrack-a-little-further-down-the-line.html

[15] http://www.johntory.ca/wp-content/uploads/2014/06/OneToronto_Backgrounder_Three_Smart_Track_Line.pdf

[16] http://www.straight.com/news/482351/transit-referendum-results-metro-vancouver-votes-no-tax-hike-public-transit-expansion

[17] http://www.wsj.com/articles/mexico-awards-first-oil-block-in-historic-auction-1436978568
Foresight 30 : Unleashing Latin America's potential

[18] Foresight 32: Levelling the playing field

[19] http://www.expressandstar.com/news/2015/08/11/7bn-hs2-contracts-go-out-to-tender-even-though-scheme-not-yet-backed-by-mps/

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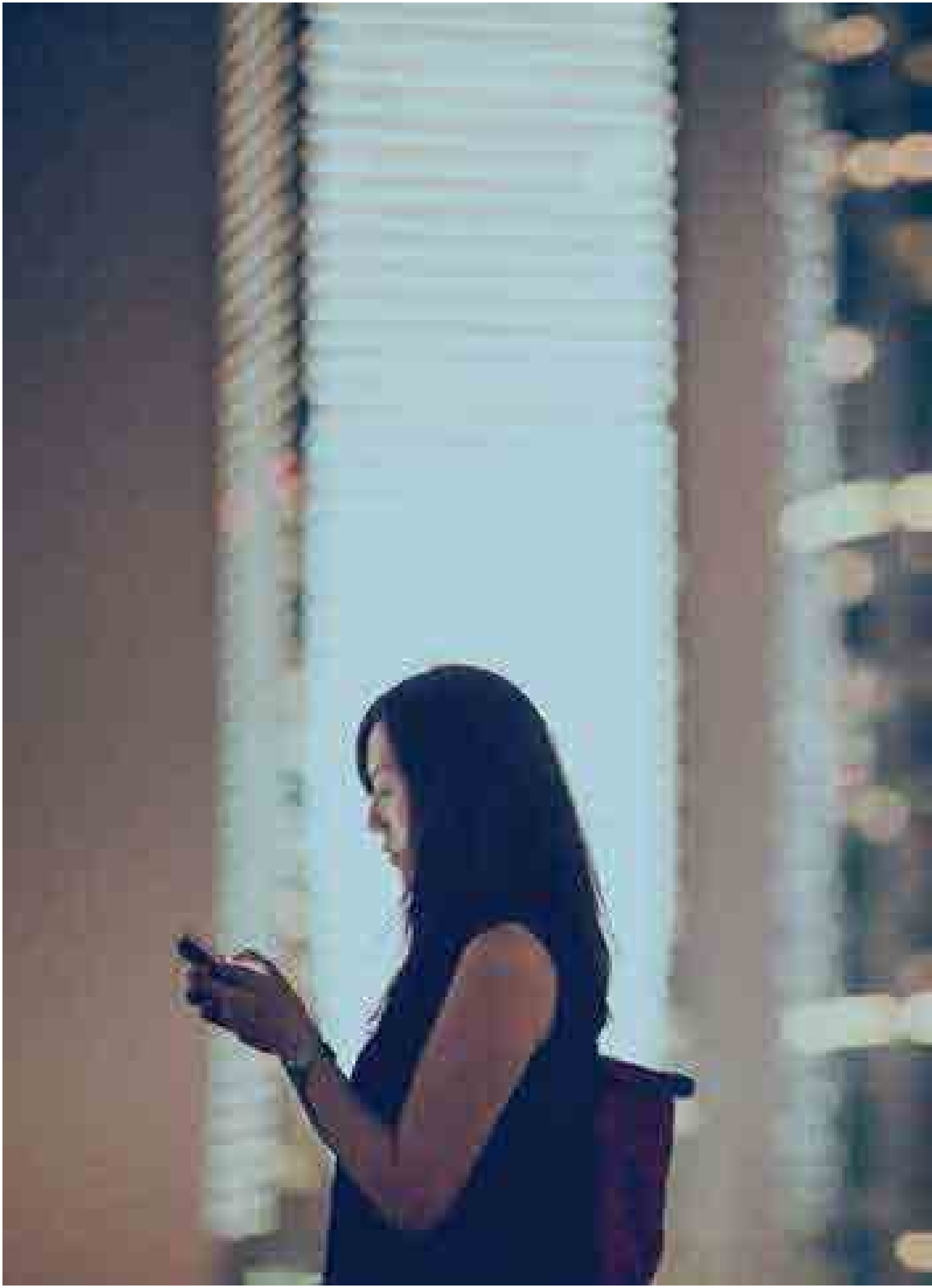
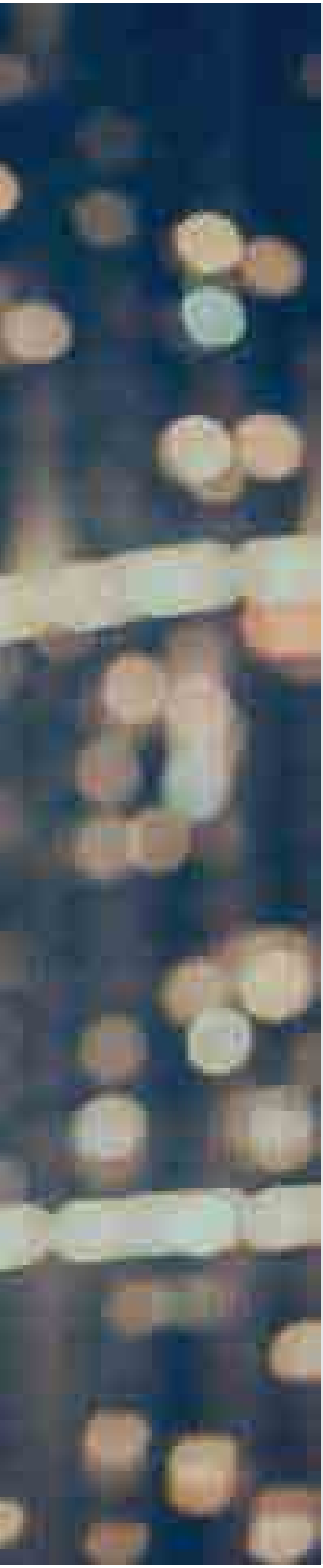




Who will stand up for the consumer?

When it comes to the private sector and infrastructure, the battle for the public's hearts and minds is still raging. And nobody should expect it to be won anytime soon. Yet while much of the debate seems to center on consumer protection, this edition of *Insight Magazine* suggests that today's consumers may actually be better protected and better represented than at any other time in history.

Talk to any anti-privatization campaigner and you'll quickly find yourself in a debate about consumer and taxpayer protection. Many seem to believe that – in an all-out rush for profits – private sector operators and developers will run rampant over the needs of consumers and users; costs will become unaffordable, assets will fall apart and service quality will suffer.

Yet all signs indicate that nothing could be further from the truth. In fact, as the burden of funding increasingly starts to shift towards user fees and charges, our experience suggests that consumers are actually gaining a stronger voice in the way infrastructure is developed and operated. The rising power of consumers as stakeholders is a key theme in many of the articles in this publication.

For their part, consumer advocates have strengthened their voice – or, more accurately, amplified it – through the use of social media. Whether privately or publicly managed, all infrastructure owners and operators are keenly aware of the impact and influence that social media carries. Even the most insulated utility providers and monopolistic state owned enterprises worry that they will become the target of the next big 'viral' consumer campaign.

But by far the strongest advocate for consumer protection is – and should always be – the regulators. The bottom line is that government has a clear obligation to protect taxpayers and citizens and, as in any case where consumer protection is required, regulation will be central to achieving that goal. Not surprisingly, we've seen a flurry of new consumer protection regulation and legislation emerging over the past decade, largely from states and nations seeking to encourage greater private participation in infrastructure delivery and operations.

That is not to say that government, regulators and private operators could not be doing more to protect the public good; more collaborative discussions between consumers, owners and operators will only help turn the tide in the battle for public hearts and minds.

Government and regulators will also need to work hard to develop the right set of regulations to strike the appropriate balance between the needs of consumers and the needs of investors (such as reliable returns, contract certainty and regulatory certainty). This is not easy; there are plenty of examples where regulation has leaned too heavily on one side or the other and, as a result, failed to protect either consumers or investors.

However, as the shift towards greater private participation in infrastructure continues to pick up steam, we believe that consumers will quickly start to recognize that – rather than losing control over their infrastructure – they are, in fact, gaining it.

Ownership is not control

Don't confuse ownership with control; while closely related, they are often two very different matters. You may own a house, but that doesn't mean you can burn it to the ground on a whim. You may own shares in a company, but that doesn't give you the right to fire their marketing people. And you may own a metro operation, but that doesn't give you the right to overcharge users or reduce service levels.

Yes, the transfer of infrastructure assets to the private sector requires the ceding of some level of control. Depending on the structure – 'ownership' can constitute anything from full privatization through to long-term concession agreements – the level of control ceded can vary considerably.

But regardless of who actually owns the infrastructure, the fact remains that government will always retain the primary public service obligation and therefore, often by way of regulation, will always maintain some level of control.

And rightfully so; it is, after all, government that will be expected to respond when services are not delivered or when prices sky-rocket, it is government that will need to step in if agreements fail, and it is government that will be blamed when public expectations are not being met.

The challenge, however, is in understanding what level of control needs to be retained in order to achieve public expectations, while still providing enough flexibility to private sector owners to manage an efficient operation.

The shift in ownership also means that public sector authorities will need to start thinking differently about how they exert control in various ownership scenarios and – importantly – what capabilities and tools they will need in order to monitor, maintain and manage those control mechanisms.

Our member firms' experience suggests that those public sector authorities able to recognize and manage the difference between ownership and control should be better placed to deliver on their infrastructure obligations, regardless of who actually owns the underlying assets.

Raising the bar

Most informed industry observers and participants already know that private sector participation often leads to improved service quality, asset management and investment. And now many are starting to recognize that it is leading to improved public sector capabilities as well.

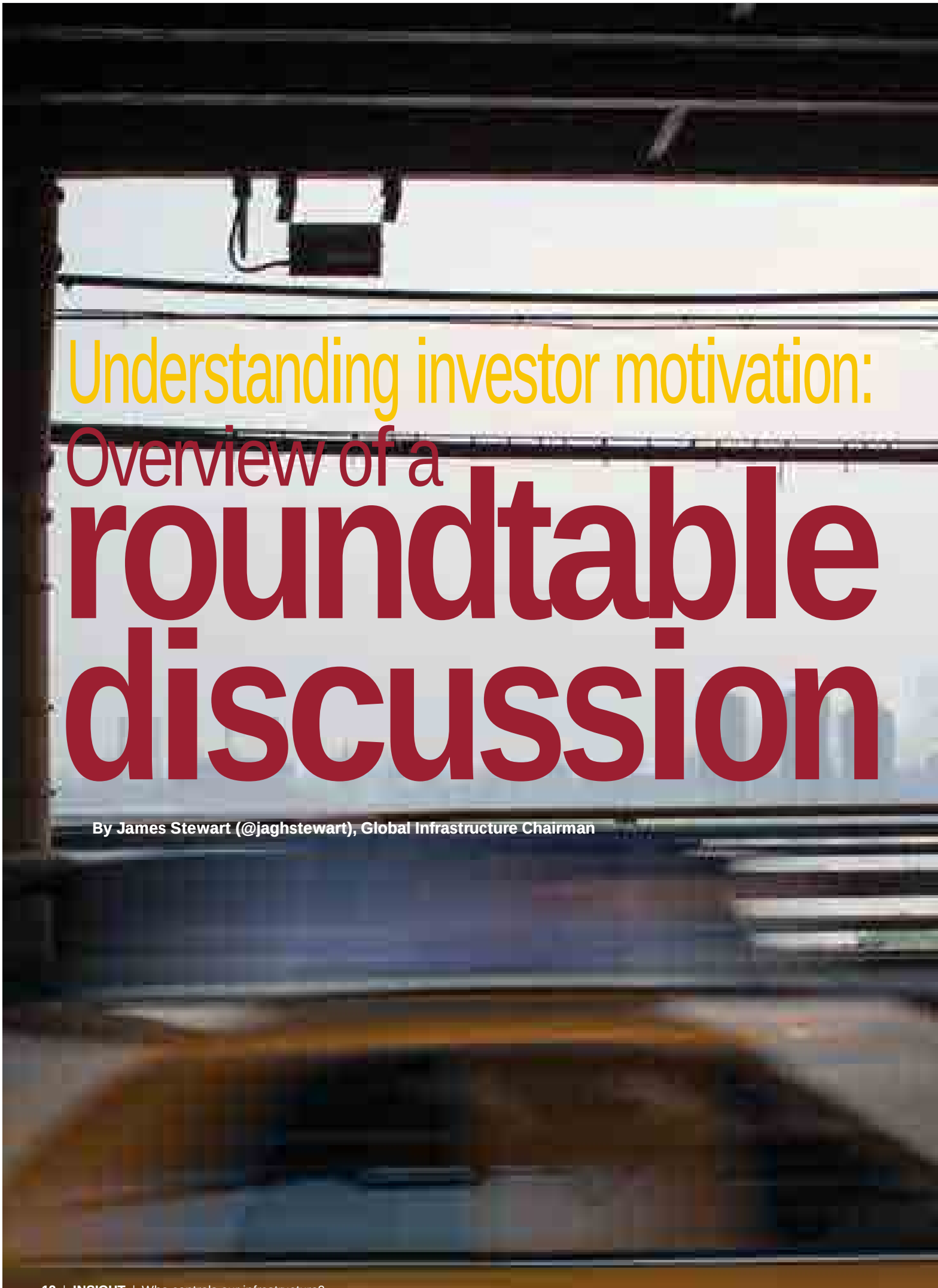
Let's face it; the traditional public sector model may not be the best service delivery mechanism for today's modern infrastructure requirements. In part, it comes down to capabilities and incentives; government entities are not famous for being hot-beds of competition and innovation. But – more often – it's because public sector models tend to view infrastructure as long-term liabilities to be managed and funded rather than as assets to be harnessed for economic growth and budget sustainability.

Our experience suggests that the status quo is now changing. Indeed, spurred on by the improved quality levels, increased sophistication and strategic outlook of their private sector competitors, many public sector organizations are now starting to take a more 'professional' view of the way they manage infrastructure.

The shift is most clear in the more 'contestable' markets around the world – power generation, telecoms and (increasingly) water, for example – where comparative information on private sector results are widely available. In some cases, the comparators are plain to see and quick to draw scrutiny. Private roads being cleared of snow long before public roads or private schools outperforming their public counterparts are the types of inconsistencies that are driving public sector players to step up their game.

At the same time, the public sector is also benefiting from the best practices and innovation of the private sector. New approaches, new technologies and new tools are constantly being developed and implemented by the private sector and – as their benefits emerge – are slowly picked up by the public sector (think of Lean Six Sigma or the use of Data and Analytics).

Clearly, the increased participation of the private sector is effectively raising the bar for all infrastructure owners, operators and managers. The big question is whether the public sector is ready to step up their game. ▰



Understanding investor motivation: Overview of a roundtable discussion

By James Stewart (@jaghstewart), Global Infrastructure Chairman

One of the greatest benefits – and, conversely, one of the greatest challenges – of private sector investment is that it has created a vast range of different investment models and investor profiles.

On the one hand, this gives public sector authorities unprecedented choice and flexibility when bringing new projects to market. But it also requires the public sector to start thinking more granularly about what motivates the various types of investors it hopes to attract.

In the past, this was a fairly easy process. Investors typically belonged to one of three groups: the public sector (whose motivations were very clear); infrastructure funds (who were clearly financially-motivated); and subcontractors (whose motivations were dictated by contract).

Today, however, there are literally dozens of different types of investors – everything from public pension funds and sovereign wealth funds through to concessionaires and global operators. And, as the following roundtable discussion illustrates, each has a slightly different motivation, investment strategy and expectation of control.

In the article that follows, I sat down with executives from three very different 'private sector' investors to explore their unique and shared motivations. **Tim Treharne**, European COO of Meridiam represents the 'new breed' of infrastructure fund, focused on long-term strategic investments and portfolio shaping. The Pension Plan viewpoint – reflective of the wider 'direct' institutional investor sector – is represented by **Dale Burgess**, a Director in the infrastructure group at Ontario Teacher's Pension Plan. And **Michael B. Cline**, VP of Physical Facilities at Purdue University represents a 'hybrid' public/private model where private investment is conducted through a 'State Instrument'.

What is interesting is that, underpinning their different investment models and strategies are also a number of very common motivations and concerns. As the following roundtable discussion demonstrates, there is significant consensus on issues such as stakeholder management, asset management and government relations. And there is broad agreement that investment decisions need to be made on more than just financial returns – the desire to catalyze public good is a clear theme that emerges from each of the participants.

With everyone agreeing that private sector participation and investment into infrastructure is only going to increase – both in scale and in investment numbers – our roundtable discussion also highlights the growing sophistication of both the investor community and the public sector authorities.

Ultimately, the viewpoints shared in the following article clearly demonstrate that there is no 'typical' investor when it comes to infrastructure. Public sector authorities and regulators will want to spend some time considering the positions shared here and reflecting on how they might respond to each investment group as they strive to attract a broader range of private investors.

The investor roundtable

James Stewart (JS): Clearly, each of your organizations has invested heavily in the infrastructure sector. What factors are driving your investment decisions today?

Dale Burgess (DB): The Ontario Teachers' Pension Plan has been investing in infrastructure assets for 15 years now and we manage a pretty diverse portfolio of assets, both by geography and by sector. When we started, we were growing our portfolio and had to be pretty opportunistic about where we went. But now I see us as more of a 'top-down, bottom-up' investor in that we have a certain portfolio that we want to create but at the same time we are continuing to look for opportunistic deals that have strong individual merits as well.

Tim Treharne (TT): Dale is certainly right; investors are becoming much more strategic in the way they make their decisions. At Meridiam, our funds are targeted at certain sectors and geographies and we're clearly looking to invest in particular types of projects. Much is influenced by the more technical metrics such as the project profile, who the potential counterparties are, the ESG (Environment, Social and Governance) assessments, and so on.

But we are always influenced by the importance of the project itself and the necessity and benefits it brings to the community. We want to avoid what might be considered 'trophy' projects; we want to focus on projects that fit with the community and satisfy their needs.

Michael B. Cline (MC): Our situation is somewhat different in that Purdue University is essentially a state instrument that – since our founding in 1869 – has always owned much of our own infrastructure: buildings, power generation and distribution, parking facilities and roadways for example. Ultimately, our objective today is very much as it has been for more than a century: deliver higher education at the highest possible value. So we have dozens of projects that are intended to improve, maintain or manage our growth while managing costs and helping to redirect capital towards value-driving investments.

JS: How has ownership translated into operational control over the assets that you own?

TT: As a long-term investor, we ultimately look to have a significant amount of control over the asset. Generally, we seek to secure a majority of the project company in each project we bid on and, in turn, we want to manage the investments we have with senior and proportional representation on the project company's Boards.

Naturally it is the project company itself that is responsible for implementing the project. We are there to make sure the project is operating in an appropriate manner ensuring that we offer safe, value-for-money projects to the communities that we serve.

DB: I think that's worth emphasizing. Teachers' views smart governance as being central to economic ownership and so we have Board representation on all the companies we invest in. But while we're active at the Board level, we're not involved in the operational decisions. We focus on helping the company's management team deliver better results for customers and for stakeholders.

MC: We recently engaged in a collaborative process which resulted in the City of West Lafayette annexing Purdue's West Lafayette campus, and we are realizing mutually beneficial results. Annexation is allowing us to deal with some relatively large projects – in the tens of millions of dollars – in a way that was previously not possible. It has allowed us to join forces with the City to create a stronger `town and gown' governance structure that prioritizes the needs of our community and leverages best practices from the private sector to help move projects forward.

The bigger challenge is that we need to constantly look for more innovative ways to create value within the rules of the state laws we are beholden to. In some situations, those in which we are not using any government money at all, we still need to find innovative procurement and project delivery models to get the best value from the market.

JS: Who do you see as your main stakeholders in infrastructure?

DB: You know, that's often one of the challenges for private infrastructure investors; there are so many important stakeholders that each play a critical role.

Infrastructure assets are generally high-profile and tend to serve an important need

in a community so clearly you have an obligation to the customers that use that infrastructure; in some cases, they are represented by regulators – another very important stakeholder in our world. Then there are the project partners – both operating and financial – that are involved in the project.

At the end of the day, our role is to invest on behalf of the elementary and secondary school teachers in Ontario so we also need to make sure we're always striving to get strong returns on the investments we are making.

TT: I think for the project companies themselves, it is pretty clear that it's their local communities that are their key stakeholders. Relationships with the local users and community around a project are absolutely critical and they are a barometer of the project's success. At the corporate level, there's a different set of stakeholders that also come into play – contracting parties such as governments and public authorities, industrial contracting parties and so on.

Ultimately, though, we really believe in developing projects that represent the communities we serve and, in doing

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Michael B. Cline, Vice President of Physical Facilities, Purdue University

so, we aim to create strong stakeholder consensus and broad support – from users and regulators – for making good investment decisions.

MC: Our stakeholders are fairly evident and we spend significant time working with them to understand and meet their needs. The most obvious are the nearly 40,000 students that invest their money into the university and expect to receive strong value for that money. But it's also the faculty, researchers, staff, local government, community members, alumni, prospective students and guests that use our facilities and our infrastructure and – over time – this has created a few interesting situations. Consider, for example, that we supply energy, water and heating and cooling services directly to more than two-thirds of our campus but we have never charged our campus stakeholders directly for their utility consumption. This creates no financial incentive for energy conservation and, as our energy management practices evolve, and we measure energy consumption by each campus unit, we anticipate that our stakeholders' energy consumption behavior will change, hopefully with a positive impact on our student affordability initiatives.

JS: How has your relationship with government and regulators evolved over the past few years?

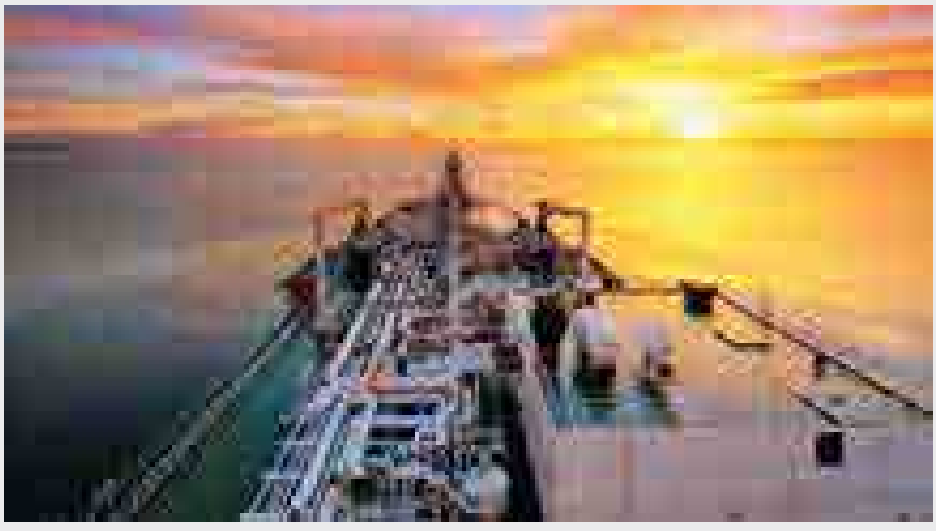
TT: Obviously, relationships with government authorities are very important. We have multinational teams with great contacts at local, national and regional levels across a range of geographies. And things like rule of law, contract certainty and transparency certainly play a major role when we make investment decisions. But I think we have developed great relationships with all of the public sector counterparties that we've worked with.

We're also always looking at new markets – those with longer-term potential – and seeing how we can work with their governments to explore new ways to help develop their infrastructure by doing workshops or showcasing projects from other parts of the world.

DB: It's interesting; in some cases, it's easier to have those conversations once you are seen to have some 'skin in the game' or investments in the country because you have more credibility with the local government. But in other cases, where we do not have an existing investment in a particular market, we're acting as almost an impartial player because we don't have a conflicted position on issues such as regulated rates of return.

And while it's often the project company that leads the relationships with the particular regulators or public authorities on a day-to-day basis, we recognize that regulators also want to hear directly from the investors themselves and so we spend quite a bit of time in conjunction with our management teams meeting with regulators and government entities.

MC: Our relationship with government and regulators are positive. We're very blessed to be led by the former Governor of Indiana, Mitch Daniels, who is now the President of Purdue University. Purdue has strong relationships with State and Federal levels of government. We also have a number of senior leaders who have held infrastructure authority positions with government in the past, which vastly helps as we strive to enhance those relationships and speed our ability to deliver infrastructure within the current context of statutes and regulatory requirements. Purdue has always had a very symbiotic relationship with government – particularly local government – who we work closely with to execute our plans.



The redevelopment of State Street in West Lafayette is a great example of these close relationships at work. The road is the responsibility of the City of West Lafayette and has significant influence on the dynamic, safety and efficiency of our city and campus. We are working very closely with the City to find innovative solutions that will allow us to strategically, and many times jointly, develop our community, while working within the City's jurisdictional authority.

JS: Who is responsible for capital investment decisions within your portfolio of assets? What is involved in the investment decision?

DB: A lot of this is wrapped up in the long-term business planning that is done with management and approved by the shareholders and it's really management's job to do CapEx planning. Not surprisingly, it's not all that different from the metrics we use when evaluating a new project. And the metrics for a CapEx investment that expands capacity – like a new runway, for example – are different to the metrics that we'd want to see if the CapEx was more focused on maintenance.

But when you talk about metrics, people tend to think of the financial ones that are used to measure CapEx. This is too one dimensional. Sometimes you just need to make the investment because of safety, quality or supply. And that's not always easy to quantify but at the end of the day it's about being a good steward of your assets.

TT: Much like the experience at Teachers', we let the Boards and management do what's in the best interest of the company and the asset when it comes to investment. That approach is not only operationally sound, it also creates unique opportunities. Our first project in Finland, for example, created a community outreach program to develop new safety mechanisms that could be applied around the project and the company went on to make numerous investments into these community-driven ideas. This concept was so popular that is was later adopted by the government as part of the scope of the subsequent project.

MC: The interesting thing about Purdue's situation is that President Daniels has been very clear about his desire to 'recycle' capital back into the campus and city. We're not just trying to reduce costs and shore up our bottom line; we're trying to ensure that our investments are being channeled towards the projects that will deliver the most value to our stakeholders on campus, in the community and in government.

JS: How do you expect infrastructure ownership to evolve over the coming decade?

TT: Clearly, there's going to continue to be an upsurge and enthusiasm for increased private participation in infrastructure. And I think that, as we see growing familiarity with public-private partnership (PPP) type arrangements, we should start to see a greater number of deals flowing faster through the pipeline. For governments, what will be key is having the right advice, capability and capacity to make sure that the projects they are bringing to market are well prepared and properly structured ahead of time.

DB: I think that the market is certainly going to continue to grow, but I firmly believe that it will take some good precedence and strong examples of success to make customers, governments and investors happy. As a sector, I think we need to play a key role in this by ensuring that we remain good stewards of the assets we own and control rather than allowing competition to drive us to increasingly aggressive assumptions. It only takes a few high-profile examples of badly structured deals or failures to stoke anti-privatization sentiments.

MC: I absolutely agree with Tim and Dale. While the US has been a bit slow to take up PPP approaches, I do believe that the natural forces will continue to drive the public market to be influenced and driven by private participation. I see that – as more organizations like Purdue strive to pioneer new approaches to deliver infrastructure – we'll see increasing appetites for the type of risk 'balance' and private participation we are encouraging here on our campus. I think that the next decade will bring renewed focus onto PPPs as more evidence emerges that they work.

JS: What do you see driving infrastructure investment decisions over the next few years?

DB: I think that – for newcomers to the sector – much will depend on their ability and capability. It's not an asset class that everyone can manage and, in our experience, if you are going to invest directly into infrastructure, you need to spend the time and resources to make sure you have the appropriate level of expertise and team to execute on your plans. I suspect that will be the biggest challenge for many. The supply of capital into the sector is only going to increase; my concern is that the competition for strong projects will result in some questionable structures and potential project failures.

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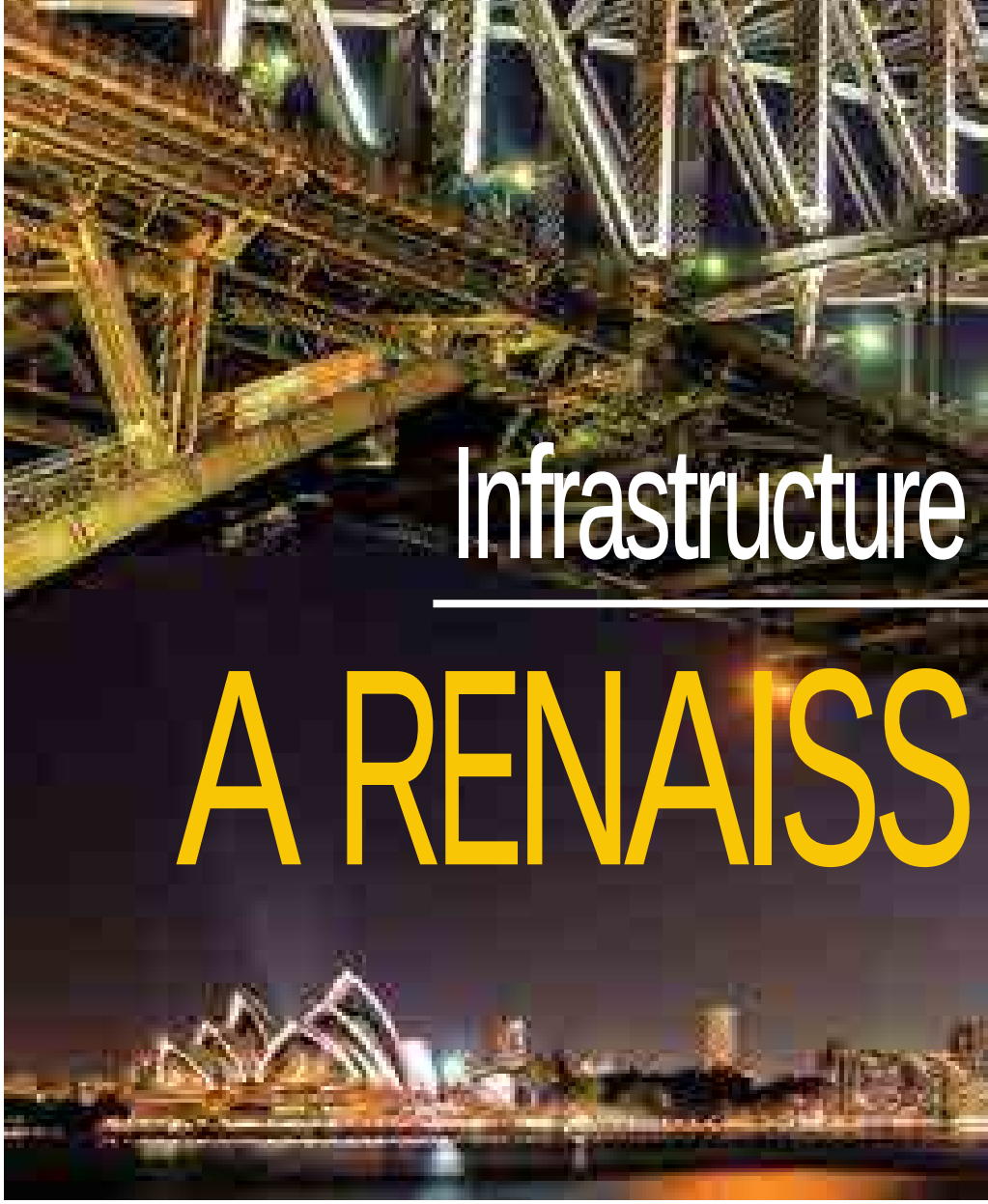
>
> **Tim Treharne,** European COO, Meridiam

TT: I think governments and investors are quickly starting to recognize that the best way to bridge the development gap between countries is by investing in developing countries' infrastructure and helping those economies to grow. I think over the next few years we will see continued focus on developing market opportunities and projects.

I think we're also going to see much more rigorous approaches being undertaken on the management of environment, social and governance issues, talking about local community and stakeholder engagement and growing focus on ensuring that projects are accepted within the environment and community that they support and deliver on the shared benefits that they create.

MC: I think our investment decisions are fairly clear if we hope to support the growth of our University. But, for us, the key is in continuing to create and structure new ways to invest into and manage our infrastructure so that we can continue to deliver higher education at the highest possible value. Where that means breaking new ground or creating new approaches, we want to make sure we are taking those opportunities and learning from the best in order to drive real and lasting value.



Infrastructure

A RENAISS

The people of New South Wales (NSW), Australia, are in an infrastructure renaissance driven by an energized state government with a vision for fully functional economic infrastructure assets that actually deliver value. With US$14.6 billion in funding from asset sales and leasing earmarked to roll out the Rebuilding NSW infrastructure plan – which will deliver road, rail and social infrastructure across regional and metropolitan NSW – the state is about to undergo its most significant rebuilding phase in decades.

To learn more about the Rebuilding NSW infrastructure plan and the asset recycling initiative, ***Paul Foxlee,*** *National Head of Transport and Infrastructure for KPMG in Australia, spoke with New South Wales* ***Premier Mike Baird****.*

Paul Foxlee (PF): What will the NSW Government achieve with the Rebuilding NSW infrastructure plan (which includes a significant investment in new infrastructure) and how do asset recycling and asset leases feature in the plan?

Premier Mike Baird (MB): The Rebuilding NSW plan was an overall strategy to bring together the infrastructure requirements of the state with the funding needed to achieve it – and present a strong message to the community about the future of infrastructure.

The funding mechanism is important because we all know we need the infrastructure and we had plans in place for the M4, the M5, a number of hospitals and railways. But with debt levels right at the top end of our AAA rating and a relatively modest operating balance, we had nothing near the US$22 billion we needed to address the infrastructure backlog we inherited. So we had to take a new approach. We looked at the balance sheet and asked ourselves, can we turn our old assets into new assets? The overall narrative for the Rebuilding NSW plan is that if we do this on a large scale we have the capacity to make a real dent in the infrastructure we all need. The US$14.6 billion program is a once-in-a-generation opportunity to get ahead of the infrastructure curve.

The key is that this kind of asset recycling creates a tangible benefit. The taxpayers understand this is not a standalone fiscal measure; this is about the capacity to fund the infrastructure that makes a difference to their lives.

PF: How do you determine which public assets are appropriate to be considered for asset recycling?

MB: There are a number of parameters we use to identify the right assets. We look at assets that are attractive to the market and appropriate in terms of regulatory oversight. Pension funds are looking for defensive infrastructure-style assets at the moment, so there's an almost unprecedented market opportunity.

The NSW ports and now the electricity 'poles and wires' fit the bill. These are the types of assets super funds around the world are seeking, particularly in a low interest rate environment. Right now we have an ideal situation where there is real interest in these assets, appropriate regulatory oversight and protections in place to safeguard NSW taxpayers.

PF: How do you intend to use the proceeds from asset sales and how will projects be prioritized?

MB: Of the US$14.6 billion proceeds from the 'poles and wires' transactions, the Rebuilding NSW plan will deliver US$4.4 billion in infrastructure for regional NSW and the balance for metropolitan areas. The focus is on rail, with the Sydney Metro the biggest ticket item. The key items we're funding include:

- An additional US$800 million to invest in the northern and southern extensions to WestConnex along with the Western Harbour Tunnel
- An extra US$5 billion for Sydney Metro, to fully fund a Second Harbour Rail Crossing
- US$15 billion for schools and hospitals
- US$3 billion for regional transport
- US$730 million for regional water security
- US$219 million for regional tourism and the environment
- More funds to sports and cultural infrastructure, up from US$365 million to US$875 million.[1]

We need to make sure the investment we are making is focused into economically productive infrastructure. The prioritization of the program is based on a plan created by Infrastructure NSW, which was set up to report on priorities to government. The first report was completed in 2012 and then updated once the additional US$14.6 billion in infrastructure funding was made available.

PF: How did you obtain a mandate from the public to enter into long-term leases for the electricity transmission and distribution

1 http://www.nsw.gov.au/rebuilding

asset recycling ANCE MAN

> When you have pressing needs of your constituents to meet, you have the capacity to do much more than you think if you look at all the resources of your state.
>
> **Mike Baird,**
> Premier, New South Wales

assets and how important is that mandate in pursuing the transactions?

MB: For 20 years this has been a very contentious issue in state politics. We took the view that if we were going to do it we needed to outline the arguments clearly and we wouldn't do it unless we received a mandate to do so. So we outlined the plan and strategy to the people of NSW and obviously they agreed. By winning the election in March 2015 we secured the mandate we needed. The funding for infrastructure is now available and the plan we have has been endorsed.

PF: How will you ensure public interest is protected once public assets become privately leased and managed?

MB: There is a strong regulator in place but there are also a number of other protection measures, including obligations around reliability and capacity for us to step in if the operator is in breach, or if we are unhappy with what is being delivered. There are also service level standards around things like response during a crisis.

There are protections under the Foreign Investment Review Board and the Australian Competition and Consumer Commission, and there is the Independent Pricing Commissioner in place to sign off on the lease to say this will not put upward pressure on prices.

PF: The large new road project (WestConnex) is a very innovative asset recycling initiative. How is the project being funded and how it is intended to be 'recycled'?

MB: State governments have to be adept to respond to market conditions. A number of public-private partnerships (PPPs) burned markets, so banks and institutional investors in particular are very unlikely to take traffic risk. Forecasts have proved very difficult to get right.

As a result, there was a shift in appetite from greenfield to brownfield investment – with established rather than projected cash flows. But there is a capacity – once there is some robustness around cash flows – to continue to participate with the private sector.

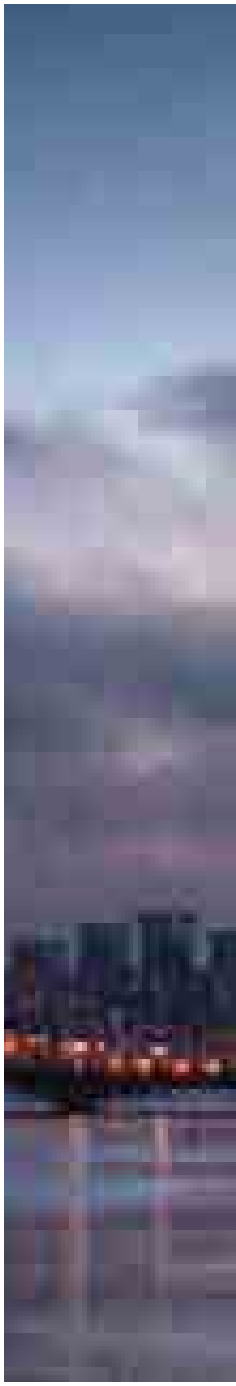
We have structured WestConnex so that rather than just government providing a grant, we make an equity contribution and that provides the capacity to build the first part of the project. Then the cash flows are built up and from those cash flows we are able to raise non-recourse debt to the state government and use that to fund the next element of the project.

Once we get to the end of the project we will have a standalone entity where the NSW government has an equity position it can recycle capital out of for additional use.

PF: What advice would you give to other governments around the globe with regards to asset recycling and asset leases?

MB: It's not for me to give advice other than to say the process works. When you have pressing needs of your constituents to meet, you have the capacity to do much more than you think if you look at all the resources of your state. If you don't have the operating budget you need you may well have capital on the balance sheet that can address those needs.

You need to be prepared to look holistically at the finances and use capital that is just sitting idly on the balance sheet. You need to be upfront with the community, and clearly articulate the challenges involved and how you intend to deal with them.



RECONSIDERING THE DRIVE TO DEPOLITICIZE INFRASTRUCTURE

By James Stewart (@jaghstewart), Global Infrastructure Chairman

Let's face it: taking politics out of infrastructure is as easy as taking God out of religion; try as you might, the two simply cannot be separated.

Yet while many jurisdictions are clearly still striving to reduce the influence of politics on the infrastructure planning process, a new approach is now emerging that – rather than decoupling politics and infrastructure – focuses on strengthening the relationship between these two inextricably linked realities. And since the release of his official Review of the UK's long-term infrastructure planning process in 2013, ***Sir John Armitt*** *has been at the center of this growing movement.*

UNDERSTANDING THE POLITICAL RISK

Over the past decade or more, volumes of literature have been written on the need to 'depoliticize' infrastructure planning. And indeed, it is easy to point to a litany of worthy projects that have stalled, been delayed or died on the pyre of political expediency.

In some cases, well-progressed projects are killed at the ballot box as new governments take office and 'clean house' of any legacy projects that may seem tainted by the previous regime. In other cases, much-needed infrastructure decisions have been punted into the next political cycle, often to protect sitting politicians from having to make difficult (and potentially unpopular) decisions.

Taken as cause and effect, one might quickly surmise that infrastructure planning and delivery would be greatly improved if only infrastructure could be wrested away from meddling politicians. On face value, the case for depoliticizing infrastructure would seem obvious.

EASIER SAID THAN DONE

Many have tried to decouple politics from infrastructure and failed. "The reality is that there is no infrastructure without politics," Sir John Armitt argued recently. "At the end of the day, much of what we term as infrastructure is focused on providing fundamental services to citizens and – in one way or another – it's the taxpayers, users and voters that pay for those services, so the cost of delivering infrastructure is always going to be a very political issue."

With this reality firmly in mind, Sir John believes that – rather than trying to force a divorce on politicians and their infrastructure – governments should instead be focused on building up the relationship. "Politics is simply a reality of infrastructure and the only way to truly reduce the negative impacts of political influence is to introduce smart

political processes that bind politicians to a long-term plan," Sir John argues.

UNDERTAKING A REVIEW

Sir John speaks from a position of authority. Over his almost 50-year career in infrastructure, Sir John has been intricately involved in many of the UK's most notable projects. He was the Chairman of the London Olympic Delivery Authority for the 2012 Games; he served as CEO of the UK's Network Rail; he led the company responsible for implementing the Channel Tunnel rail link; and he helped build the Sizewell B nuclear power station. His efforts to improve the UK's rail network earned him a CBE in 1997 and he was knighted in 2012 for his work on the London Olympics.

Given his depth of experience and his extensive insight into the political challenges facing the country's infrastructure sector, it was not surprising that the UK Labour Party selected Sir John to undertake an independent review of the country's long-term infrastructure planning in 2012. In particular, Sir John was asked to place his focus on finding new ways to improve the country's long-term infrastructure planning and new approaches for building political consensus around key decisions.

THE PATH TO CONSENSUS

The Armitt Review, which was published in September 2013, made a number of core recommendations aimed at achieving cross-party political consensus, public support and investor certainty. Central to the Review was the recommendation for the formation of a new – and fully independent – National Infrastructure Commission responsible for assessing, planning and monitoring the country's long-term (25–30 years) infrastructure needs.

INSIDE THE ARMITT REVIEW

The Armitt Review makes a number of recommendations aimed at achieving cross-party political consensus, public support and investor certainty for long-term decisions on the UK's infrastructure needs. These include:

- A new independent National Infrastructure Commission to look 25–30 years ahead at the evidence for the UK's future needs across all significant national infrastructure and set clear priorities to support national objectives such as nationwide flood prevention or energy supply.
- This National Infrastructure Assessment would be carried out every 10 years and include extensive research and consultations with the public, local government, NGOs, regulators and other interested groups or individuals.
- A parliamentary vote on the evidence-based infrastructure priorities would have to take place within 6 months of their publication, to avoid delays.
- Within 18 months of this vote government departments would have to form detailed 10-year sector plans of how they will deliver and fund work towards these priorities.
- Parliament would then vote on these 10-year plans and the permanent National Infrastructure Commission would scrutinize the ability of these plans to meet the 25–30 year national priorities and report to parliament annually on their delivery.

> Politics is simply a reality of infrastructure and the only way to truly reduce the negative impacts of political influence is to introduce smart political processes that bind politicians to a long-term plan.

Sir John Armitt
Former Chairman, Olympic Delivery Authority & CEO of the UK's Network Rail

What makes Sir John's proposals different from other approaches is that his plan calls for politicians to take ownership over the long-term decision-making process by allowing them to debate – and then vote on – the National Infrastructure Commission's 10-year assessments and (at a later stage) the individual Government Department's proposed actions and investment plans to achieve the stated national objectives.

"By asking parliament to debate and vote on the national assessment and departmental plans, we are essentially binding the political parties to a long-term consensus on what the national infrastructure priorities should be for the next 10 years," added Sir John. "Once you have that cross-party political buy-in, you can start to create an environment where there is a greater degree of certainty around major projects and long-term investments."

MORE THAN JUST A PLAN

Sir John recognizes that his plan will require significant political will and effort to implement. Public consultation and engagement will be key. "Politicians are easily influenced by voter sentiment which is tightly linked to engagement – the more you engage the public, the more support the project will likely receive; ignore the public, however, and you are quickly going to find yourself on the back foot."

Governments will also want to spend more time thinking through the long-term needs of the country and understanding what they want to achieve through their investments. "The weakness in so many of these long-term strategic processes is that few governments or project owners really stop to ask why they are doing what they are doing," noted Sir John. "The more effort that government can put into debating the 'why' at the front end, the better the outcomes of their decisions will be."

Sir John's discussions with a broad range of industry players – both in the UK and overseas – also highlighted the need for creating the right governance structure for long-term infrastructure planning and execution. "The reality is that most governments suffer from fragmented ownership of the infrastructure decision-making process which means that there are often too many cooks in the kitchen," added Sir John. "It is critical that long-term planning be supported by the right governance structure that includes precise responsibilities across the public and private sector."

THE ROAD AHEAD

Based on his initial Review, Sir John published two further documents for consultation; a Draft Bill that outlines the structure, framework and membership of the proposed commission and a summary of the steps that will need to be taken in order to deliver it. A set of revised proposals and a revised Draft Bill have been completed, ready to be taken forward by the new administration.

"At the end of the day, the focus should be on delivering the infrastructure we need to serve us, our children and our grandchildren into the future and these are questions that don't often enjoy the level of national debate and political support that they should," added Sir John. "This isn't about removing politics from infrastructure, this is about building political consensus on the long-term needs of the country and that is something that all politicians can agree to work towards."

Evolving as manageme

A business-driven approach

set nt

Infrastructure owners, managers and investors have been talking about asset management for years. But over the past decade, a new view of asset management has emerged and quickly become an essential discipline for infrastructure organizations around the world.

However, achieving real maturity in asset management will not only take patience, insight and a methodical approach, it will also require asset owners to take a more holistic view of the environment in which they operate. And our experience suggests that there are still a number of challenges that asset owners will need to overcome if they hope to make asset management a key competitive advantage in the future.

By Mel Karam, Global Head of Asset Management

It is not surprising that the topic of asset management has rocketed up the infrastructure agenda. For asset-intensive corporates such as oil and gas producers, good asset management will improve plant availability which drives long-run efficiency and profitability; for the public sector, it delivers the best long-term value for the investment of public funds in assets such as roads, hospitals and schools.

Simply put, asset management is about optimizing the management of physical assets – across their entire lifecycle – to sustainably achieve an organization's objectives. And in today's economic environment, the benefits of improved value, profitability and efficiency from assets simply can't be ignored.

PRESSURE TO CHANGE

It's not just canny business sense that is driving asset management up the agenda as both an executive-level strategic business function and as a professional discipline. Infrastructure owners and managers are also facing a number of other socio-economic trends and pressures that, ultimately, can only be solved with better asset management. These often include:

- *Heightened customer expectations:* For publicly and privately-owned infrastructure assets, customer service has rapidly become a key competitive advantage. But there is a strong interdependency between asset reliability and availability on one hand, and customer service on the other. For example, airport operators need reliable baggage handling equipment to reduce wait times and improve airport experience for passengers.
- *Improved technology and innovation:* Recent developments in data and system technologies have enabled infrastructure owners and operators to achieve much more valuable insights about the health and condition of their assets which, in turn, allows better-informed base maintenance and investment decisions. Remote and wireless condition monitoring of jet engines, for example, has allowed airline operators to extend the time between routine maintenance and increase flight hours.
- *New stakeholder interests:* As infrastructure assets become an asset class in their own right, new institutional investors are demanding more rigorous and structured approaches to investment planning in order to better predict cash-flow and control costs. As pension funds, sovereign wealth funds, insurance companies and other institutional investors increasingly invest in infrastructure, long-term (25–40 year) strategic asset plans have become an essential and integral part of investment planning in privatized utilities around the world.
- *Increased regulatory requirements:* Facing an increasing regulatory burden on infrastructure businesses (often including economic, environmental, safety and technical regulation), asset owners are now responsible for a more stringent set of outputs which, in turn, demand better asset management tools. For example, the 2012 US Congress Act MAP-21 approved an annual investment of US$40 billion on the national highways system, subject to each state developing a risk-based asset management plan to achieve federal performance targets. Elsewhere, large catastrophic safety incidents (such as the

2010 St Bruno gas pipeline explosion in California which killed eight people and resulted in a US$1.6 billion fine for the owners) typically expose shortfalls in asset management practices and lead to increased regulatory interventions.

- *Rising demand and funding challenges:* With demand for more capacity and improved reliability continuously increasing, owners are adopting asset management principles to extend the life of their assets through optimized operations, improved maintenance and targeted investments. According to the World Economic Forum, there is a global annual funding gap of US$1 trillion per year in transport, power, water and telecoms. World infrastructure will continue to age, requiring better asset management practices.
- *Improved market reputations:* In many sectors, it has become customary to seek to adopt best practice tools and techniques in asset management in order to gain recognition as world-class operators and to minimize potential reputational risks that may stem from outages, service interruptions or accidents. For example, good asset management plans give water and electricity customers and stakeholders the confidence that their money is invested in the best possible way.

STANDARDS BRING IMPROVED MATURITY

The introduction and adoption of international standards for asset management has also thrust the topic up the infrastructure agenda. Indeed, the publication of the International Asset Management Standard series ISO5500/1-3 in 2014 brought the discipline to the world stage and captured the attention of asset owners and operators that had not previously encountered it.

However, while the standards are now generally well understood and publicized, our experience suggests that their application and, as result, the degree of maturity in asset management practices, varies widely across the world. Broadly speaking, countries tend to fall into one of three categories of asset management maturity.

1. *Practicing*: Countries that actively practice asset management include the UK, Australia and some Western European countries.
2. *Developing*: Markets that are active in asset management but are still developing their practices include North America, New Zealand and some of the Gulf States.
3. *Embarking*: Brazil, India, South America and Southeast Asia all show signs of understanding the value of asset management but are only at the early stages of development.

CREATING THE RIGHT ENVIRONMENT

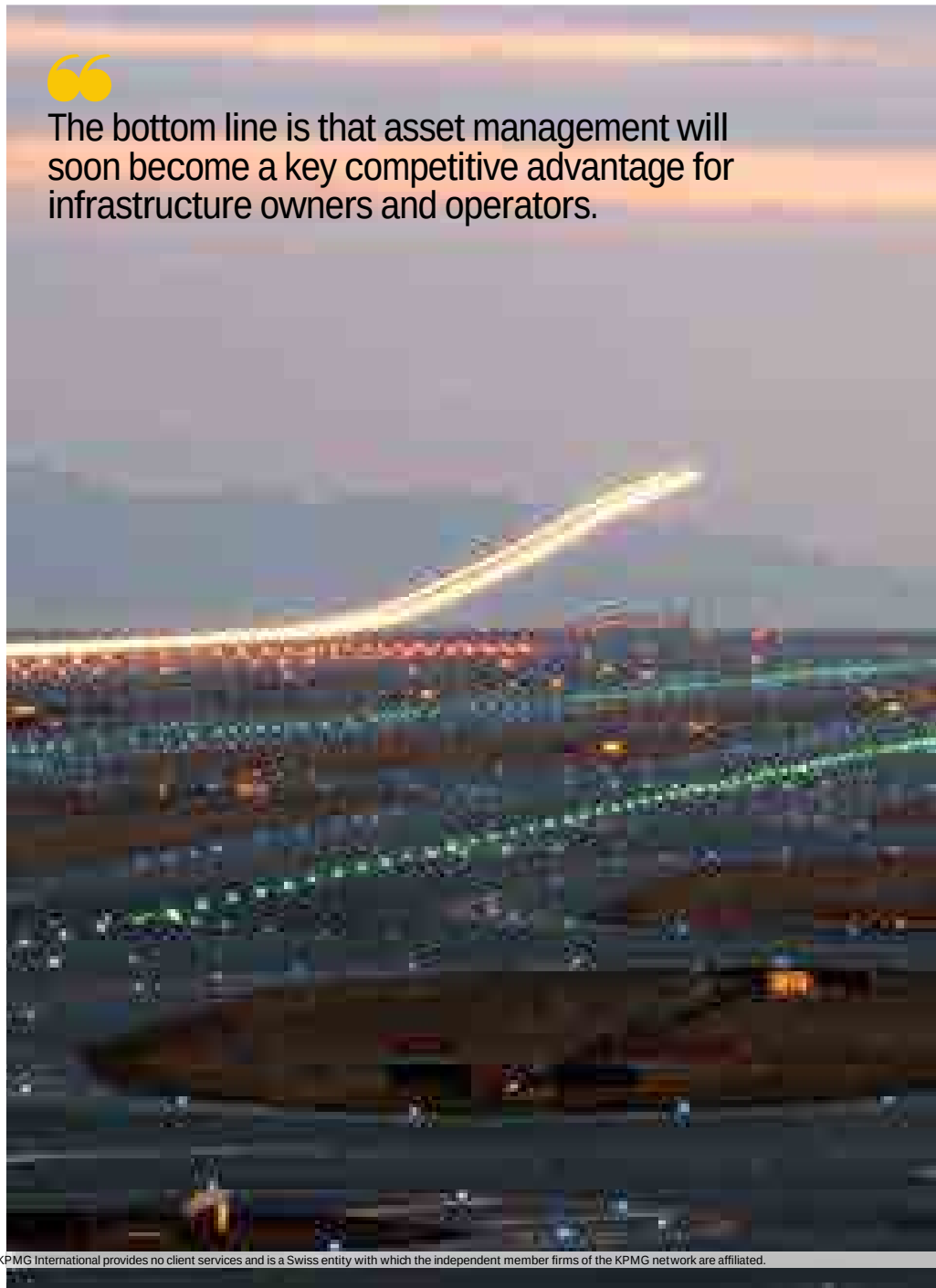
While the concept of asset management was first used in Australia in the late 1990s, today it is the UK that is widely recognized as the leader in the field. In part, this is because it was the UK's Institute of Asset Management (IAM) that developed the first formal set of standards under the British Standards Institute title of PAS55, which ultimately formed the foundation for ISO5500.

The UK's leadership is also largely related to the high level of infrastructure privatization, high proportion of aging assets requiring investment, and the existence of clear regulatory frameworks for public and private infrastructure businesses, all factors that are becoming more common in other countries. All UK infrastructure regulators – including energy, water, transport, and telecoms regulators – have clearly recognized the value of asset management and have developed incentives to help raise the discipline as a core business competency.

As a result, most owners and operators in the UK now practice the discipline internally and many have developed a very strong capability in supply chain (engineering and management consultancy) over the past 15 years. This is a trend that is also growing within the developing category of countries.

FIVE KEY CHALLENGES

While the UK may enjoy a number of advantages over other markets, asset managers in the UK – and around the



world – often struggle with five key challenges as they strive to improve their asset management capabilities and maturity.

1. *Improving asset data management and data quality:* Virtually every asset management activity relies on good quality data supported by the right systems to properly acquire, store and analyze it. However, our experience suggests that many organizations are struggling to secure or develop the internal capability to properly define the need and specify the outcome.
2. *Planning and prioritizing asset investment:* As executives of public and private organizations start to recognize the value of smart investment planning, many are rethinking their medium and long-term investment plans in order to maximize corporate financial health. Identifying, understanding and promoting good discipline in this activity is often a challenge.
3. *Building a corporate-level integrated asset management strategy:* Many asset managers and owners are seeking strategies and plans to promote corporate level strategy development aimed at reducing on-going costs and optimizing asset performance.
4. *Improving risk assessment and management:* While asset failure risks are typically the largest items on infrastructure corporate risk registers, today's asset owners and managers need to better understand both their known and unknown risks in order to develop a resilient and robust asset management strategy.
5. *Implementing new regulations and standards:* Asset managers and executives will need to focus on improving their methods for translating the requirements of regulation and standards into internal plans both today and in the future.

TOMORROW'S COMPETITIVE ADVANTAGE

The bottom line is that asset management will soon become a key competitive advantage for infrastructure owners and operators. Those able to continuously improve and adapt their approach to asset management will ultimately reap the benefits of improved value, profitability and efficiency from their assets. Those that ignore the disciple do so at their own peril.

The good news is that – for those who have yet to evolve their asset management strategy – all is not lost. The reality is that every step along the pathway to maturity is a positive one and there are plenty of examples of successful asset management programs to learn from. The key is to start taking steps today rather than waiting until tomorrow.

CRITICAL QUESTIONS TO CONSIDER

- Do I accurately know what assets I have, what conditions they are in, how critical they are to my business objectives, and what contributions they make to the bottom line of the business?
- Do I know what performance measures I expect from my assets, and how are they likely to perform against those measures in the future?
- How do I invest in, operate, maintain and replace my assets at the lowest overall cost possible, given the outputs required to deliver, and the performance levels I expect from them now and in the future?
- Do I know the critical risks that my assets are exposed to, and the likely costs of those risks materializing?
- Does my organization base its investment decisions on a robust understanding of costs of owning and operating its assets throughout their lifecycle?
- How good are my internal processes, systems, and people competencies in relation to my assets?

For more information on how KPMG can help you address these critical questions, contact Mel Karam, KPMG's Global Head of Asset Management, at infrastructure@kpmg.com

The time is ripe to invest in infrastructure

Lessons learned from 20 years of rating project debt could help underpin the potential impact of the 'multiplier effect' of infrastructure investment on the wider economy, making the timing of the European Commission's 'Juncker plan' ideal, says Standard & Poor's Ratings Services ***Michael Wilkins****, Managing Director of Infrastructure Finance.*

Michael Wilkins, Managing Director of Infrastructure Finance, Standard & Poor's

The timing for governments, banks and private investors to invest in infrastructure couldn't be better. Today, infrastructure projects stand as one of the most robust and stable investment assets, according to a review of over 20 years of project finance ratings by Standard & Poor's Ratings Services (S&P).

Meanwhile, recent studies suggest that investment in infrastructure can have a significant positive effect on Gross Domestic Product (GDP). Indeed, the 'multiplier effect' enjoyed by infrastructure investment can make it worth double the original value to the wider economy through increased employment and productivity. And this conclusion is leading to a political response – the European Commission's (EC) 'Juncker Plan' being a case in point. As such, S&P believes that over the next 3 years all eyes will be on Europe – and if the plan is successful, it could provide a template for other governments and public bodies to follow suit.

LEARNING FROM LESSONS PAST

Of course, they will need a good grasp of the risk presented by infrastructure assets before doing so. Over the past 20 years, S&P has rated 513 projects covering more than 573 separate debt issues. And of these 573 issuances, 39 have defaulted. A study of these defaults concluded that projects can fail for reasons ranging from the simple and easily identifiable to the varied and complex.

S&P has recently redesigned its criteria for assessing global project finance reflecting the lessons learned from the past. The causes of defaults can be divided into seven broad groupings: technology or design, operational, hedging/commodity exposure,

market exposure, structural weakness of the parent, counterparty failure and regulation (see table below).

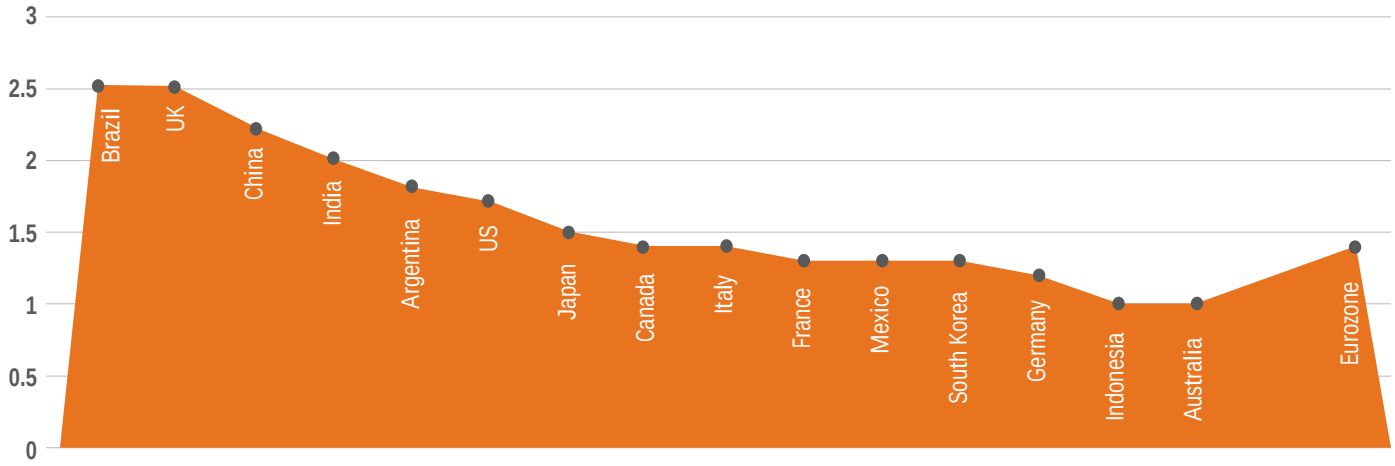
While the study shows that some failed projects experienced problems in more than one of these areas, S&P believes that clearly differentiating the risk factors is essential for the success of future project financings. Doing so will highlight potential weaknesses and ultimately provide better project appraisal and selection, leading to comprehensive cost-benefit analyses.

Indeed, the sector has absorbed lessons from the past, specifically by minimizing market exposure risk (the biggest cause of default) and strengthening project structure to provide the necessary resilience to withstand external threats. Alongside this, work has been done to improve transaction structures, mitigate construction risk and reduce counterparty exposure.

Breakdown of project finance issue defaults

	No. of debt issues	% of defaults	Aggregates	% of defaults
Technology or design (during constuction/ramp-up)	7	20.59	Technology and operations	29.41
Operational (underperformance, higher capital expended, etc.)	3	8.82		
Hedging/commodity exposure	2	5.88	Market for input or output	32.35
Market exposure (price or volume)	9	26.47		
Structural weakness at the parent	6	17.65	Structure/counter-parties	35.30
Counterparty failure	6	17.65		
Regulation	1	2.94	Regulation	2.94
Total	**34**	**100.00**		**100.00**

1.1 Estimates of multiplier effect (2015–2017) based on a spending increase of 1 percent GDP



Source: Data from OECD; S&P calculation

THE 'MULTIPLIER EFFECT' BRINGS SIGNIFICANT RETURNS

Given the floundering economic recovery in many regions around the world – especially Europe – such improvements in assessing project finance creditworthiness are timely. Indeed, recent studies have shown that investment in robust and well-managed infrastructure projects can help to strengthen the wider economy as a whole. By generating much more than the initial spend in terms of total economic output, investment in infrastructure benefits from a 'multiplier effect'.

This is because there are considerable short- and long-term benefits to be won. Initially, infrastructure spending tends to boost job creation in the construction industry, which requires materials, goods, and services from other areas. This demand consequently has a positive 'knock-on' effect on employment in these related sectors – the demand for engineer and surveyor services increases, for example. As the total wage bill rises, people spend their additional income on consumer goods and services, again creating more jobs and benefitting the economy as a whole. S&P estimates suggest that for each 1,000 jobs directly created by infrastructure construction, overall employment rises by approximately 3,000 jobs.

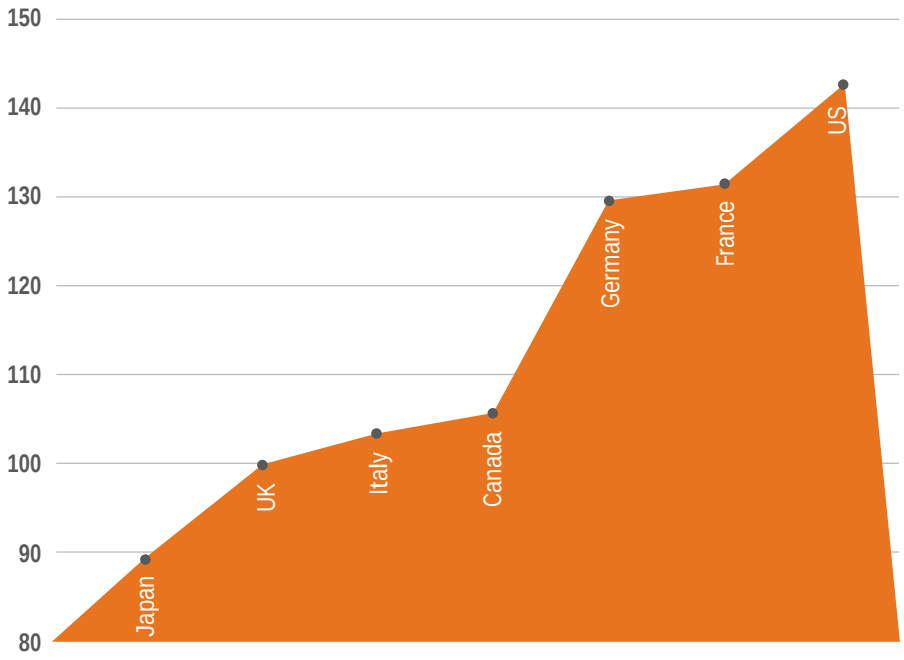
But the benefits don't stop there. Over the longer term, improving infrastructure through increased spending can enhance productivity – improving roads and railways can reduce transport costs and time spent traveling, for example. Certainly, there's no shortage of examples in which a large infrastructure project has had a transformative effect. The 80 kilometer-long Panama Canal – now in the final stages of a massive expansion – instantly facilitated international maritime trade. Similarly, the Channel Tunnel connecting France and the UK, which opened in 1994, now ushers an estimated 20 million passengers (and almost that many tons of freight) each year between the two countries.

As such, infrastructure spending boosts output through demand in the short term and supply in the long term. But some economies benefit more than others. This is because the magnitude of the demand-driven effect depends on where an economy stands in its economic cycle – it tends to have the strongest impact when the economy is at its weakest. At the same time, the supply-driven effects depend on the scale of investment. Therefore, the magnitude of the 'multiplier effect' can vary considerably.

Chart 1.1 displays estimates of the multiplier effect to a range of economies over a 3 year period (2015–2017) following a hypothetical infrastructure spending increase of 1 percent of real GDP in the first year.

Generally speaking, S&P found the multiplier effect to be greater in developing economies than for more developed countries. China, India and Brazil, for example, would all

1.2 GDP per hour worked in G7 countries (2013)



Source: Data from OECD; S&P calculation

enjoy a boost to GDP of at least double the original investment, while the multiplier effect for countries such as Australia, Germany, and Canada would be much smaller.

The UK, however, provides a notable exception. According to S&P, the UK has one of the highest potential multiplier effects of the countries examined at 2.5. This is partly because the UK is lagging behind the rest of the major G7 industrialized economies in terms of productivity of labor. For instance, in 2013 one hour of work in the US was over 40 percent more productive than one hour of work in the UK (see chart 1.2).

S&P believes that insufficient investment in infrastructure has been one of the key factors explaining weak productivity performance in the UK and with an accumulated infrastructure investment deficit of more than GBP60 billion (US$95 billion), a clear opportunity exists.

Indeed, investment in the UK's infrastructure has been shown to benefit the economy far beyond the initial sum invested. For instance, simulations show that each additional GBP1 spent on infrastructure would increase real GDP by GBP1.9 over the following 3 year period. We also predict that additional spending of 1 percent of GDP in the UK would add more than 200,000 jobs in the same timeframe.

Even though the potential returns are better for some than others, S&P believes it is vitally important for all countries to improve the quality of their infrastructure investments in addition to increasing spending – regardless of where economies stand in their development.

ALL EYES ON EUROPE

Measures are already being taken to exploit the 'multiplier effect' in order to promote healthy economies in the future. One such initiative – being watched closely around the world – is the EC's 'Juncker Plan'. The plan, formally adopted in January 2015, has identified a pipeline of 2,000 projects which it expects to be financed primarily through the capital markets over the next 3 years (2015–2017).

To kick-start the plan, the European Fund for Strategic Investment (EFSI) will make an initial investment of EUR21 billion – made up of EUR16 billion from the EU and EUR5 billion from the European Investment Bank (EIB). The hope is that this initial EUR21 billion – alongside a combination of credit enhancements and incentives – will attract up to 15 times more investment through the 'crowding-in' of private investment. Over the next 3 years, the plan aims to inject EUR315 billion into the European economy.

Certainly, this is an ambitious target. Some obstacles – such as the short-time frame of only 3 years – could limit its success. And some argue that the 'grandiose' plan is nothing more than an over-ambitious 'wish list'.

S&P believes that its success will rely on convincing investors that the plan is achievable and realistic by providing attractive and viable investment opportunities. With strategic planning and careful management, the 'Juncker Plan' could offer a template for other struggling economies to adopt in the future.

Learning from history,

*The debate over who controls and delivers infrastructure is not new. But it is constantly evolving. To better understand where the debate is going, we sat down with three prior leaders of major infrastructure units – **James Stewart (@jaghstewart)**, former CEO of Infrastructure UK, **Larry Blain**, former CEO of Partnerships BC in Canada, and **John Fitzgerald**, former interim CEO of Infrastructure Australia – to look at the experience of these three countries over the past few decades and to draw some conclusions about how the debate will evolve over the coming decades.*

preparing for the future

Editor (ED): Looking back over the past three decades, how has the control of infrastructure shifted in your market?

James Stewart (JS): I think the UK has seen the most change over the past 35 years. In the 1980s, we had the first wave of privatization which was largely driven by a general dissatisfaction with the quality of service provided by public monopolies, coupled with the expectation that increased competition in the private sector would lead to improved customer service.

Initially, effective control over those newly-privatized assets rested with the executive management and the boards as the shareholders were widely dispersed amongst retail and institutional investors. However, this changed as – over time – the retail investors sold to institutions who, in turn, sold to infrastructure funds who became active investors and, ultimately, the effective controllers of the businesses.

Then in the 1990s, we went through another shift, this time aimed at speeding up the delivery of the infrastructure investment pipeline through private participation which essentially was the start of private finance initiatives (PFIs) and public-private partnerships (PPPs) in the UK. And so, once again, there was a change where the management and

control of the asset was defined under a partnership contract, with the government having significantly more influence and ultimate ownership via the contract.

Larry Blain (LB): The experience in North America has been somewhat different to the UK in that we have seen very few infrastructure assets fully privatized. In fact, in the true sense of the word, control over infrastructure in Canada and the US has always remained firmly in the public sphere.

What we have seen over the past few decades, however, is an increasing recognition that the public sector may not be the best delivery agent for infrastructure. And, as a result, we've seen greater participation by private players – investors, contractors and operators – in the Canadian market. While the US market has been somewhat slower to move towards PPPs, most states have now either drafted or passed PPP legislation over the past few years.

John Fitzgerald (JF): Australia's experience has been a bit of a hybrid between the UK and Canada. In some sectors – healthcare and education, for example – the private sector has always played some role in infrastructure delivery. But, for the most part, infrastructure was largely the remit of the public sector.

Over the past 20 years or so, however, the private sector has become much more involved in infrastructure investment and delivery, both through PPPs and – increasingly – through the privatization of assets. The changes in Australia, in many ways, have mirrored those in the UK, but with a lag of about 5 years or so.

ED: What impact have these experiences had on today's debate over the control of infrastructure?

JF: I'd like to believe that each government has learned quite a bit from their early experiences. In the Australian context, some of the early private financing models failed because the government didn't get the risk transfer right, whereas there is now a much more realistic understanding of which risks can be allocated to the private sector and which must remain with the public sector.

The experience in Australia has also helped the government shift its objectives for private participation away from simply transferring risk and towards longer-term objectives such as improving value for money and operating efficiency which, in turn, has led to more transparent and collaborative dialogue between the public and the private sectors. This dialogue has essentially become less about ownership and control, and more about the quality of infrastructure services.

LB: Canada's historic focus on PPPs rather than privatization has led to a bit of a different debate. Indeed, since all infrastructure is owned by the public sector, the conversation in Canada often leans more towards questions about funding and the impact on taxpayers and users rather than concerns about who ultimately owns the infrastructure.

The Canadian experience has also put more focus onto optimizing the funding mix between public and private sector sources in a way that enables a transfer of risk to the private sector while minimizing the use of relatively expensive private capital. I think it's a more nuanced debate about the role of each of the funding parties rather than a debate about ultimate control.

JS: All evidence in the UK suggests that we've hit another significant change point in our evolution. Privatization and private participation are fairly well-understood models in the UK and the government continues to make heavy use of PPPs and select privatizations to improve the delivery of infrastructure.

However, there is also an increasing recognition that some level of government intervention may be required in sectors where the private sector can't always be trusted to be there, or where the risks are simply too great for the private sector to absorb. The UK Guarantee Facility, for example, was essentially created in 2012 as ballast against constrained infrastructure private finance markets. And it is clear from the ongoing airport debate that government will need to continue to be involved in the decision-making and cannot just leave it to the private sector airport operators.

This has led to a rather complicated environment where the government is often struggling to define its role and develop a reliable solution that allows them to avoid being the 'lender of last resort' and all of the moral hazards that often come with government intervention.

ED: What role has the public played in the debate?

JS: I think the public debate has shifted over the past few decades. At a high-level, I think the UK public generally understands the role that the private sector plays in UK infrastructure delivery; particularly in relation to the privatized utilities where I believe the public is fairly confident that the right regulation is in place to protect their interests as taxpayers and as consumers. PPPs, however, are often a different story and remain a political hot potato.

But I also firmly believe that the public – and more particularly the consumer – will start to play a greater role in the debate as more of the funding burden shifts towards user fees and direct taxation. London's CrossRail project, for example, was partly funded through supplemental business rates and Crossrail 2 may have to go down a similar route. And as this happens, businesses and consumers will demand a greater say in the decision-making process.

LB: If you look at 'control' somewhat loosely, you can make the argument that the public

has always been in control of infrastructure, first as taxpayers, and now increasingly as consumers. In addition we are now seeing greater participation in the PPP financing markets by pension funds (particularly public pension funds) as investors. This essentially shifts an element of control over infrastructure priorities back to broad-based public ownership, albeit managed through proxy by investment managers (who, frankly, are judged based on returns to pensioners rather than the social impact of their investments).

JF: Yet we mustn't underestimate the public and their ability to understand the shifts in control or delivery of infrastructure services that are currently underway. Twenty years ago, very few people in the general population truly understood the financial markets, but today everyone from your dentist through to your children's teacher seems to have their own stock portfolio.

I believe that – in 10 years' time – the public will have a much more mature understanding of the role the private sector should play in infrastructure delivery and how that delivers better outcomes for the public and consumers.

ED: Looking ahead 25 years, how do you expect the debate over control of infrastructure to evolve?

JF: As Larry noted earlier, we've started to see greater participation from pension funds – SuperAnnuation funds as they are called in Australia – in the infrastructure space. Of course, these funds manage the pension savings of the vast majority of citizens or the public who are consumers of infrastructure services.

As these funds increase their investment and shift towards more 'direct' investment structures, we'll also see institutional investors start to play a greater role going forward. Combined with the rise of the infrastructure funds, I suspect we'll start to see control and delivery become more consolidated from an ownership perspective, ultimately by the public, as Larry suggested.

JS: I'd agree with John; institutional investors will certainly start to play a greater role in the infrastructure delivery process. And I suspect that might ultimately lead to a greater polarization of control between institutional investors on one side and consumers who, as users and ultimate funders, will start to flex their muscles. What role the regulator plays in this will also continue to evolve.

I suspect that the UK will also start to zero in on achieving a sustainable balance between private sector participation and government intervention which, in turn, will clarify government's role and level of control over the infrastructure.

LB: I suspect that – in Canada and around the world – over the next 25 years we will see countries start to really perfect the current PPP models to achieve the right balance between financing, risk transfer and consumer protection. Each market's balance will be different and therefore the ultimate 'control' of infrastructure will likely vary, influenced by culture, history and social expectations.

Canadian culture, history and social expectations, for example, suggest that the model of private investment into publicly-owned infrastructure will continue into the future, albeit executed in different ways depending on the funding sources and sector.

ED: What are the longer-term implications for public and private infrastructure participants going forward?

LB: The reality is that competition for private investment into infrastructure is going to increasingly tighten as more and more markets shift towards private partnership models.

I think what we'll see is significant improvement in policy frameworks for the delivery of PPP models and a greater understanding of what that means in terms of effective delivery in the public interest. Recent reports by the US Treasury and a Congressional Committee have both suggested that the US needs to increase investment into planning and policy if they hope to attract private investment. And I think this will catalyze other markets to start thinking more strategically about effective delivery.

JF: As consumers gain more clout, we'll continue to see a greater level of transparency and public communication regarding infrastructure decision-making.

The public will enjoy greater access and insight into why certain business cases, contractual agreements and controls were developed or why certain models were selected. Private participants will also start to become more actively engaged in the wider public policy debate around infrastructure decision-making. And, as a result, I believe we'll see a significant shift in public perception about the role that private participants can play in the delivery of infrastructure.

JS: I absolutely agree with Larry and John. In most markets, the consumer has largely been left out of the conversation about infrastructure delivery and funding and – as we start to see more 'user pay' models and the further removal of subsidies in some markets – governments and private participants will need to pay much closer attention to the consumer.

At the same time, however, the consumer is becoming much more sophisticated in their understanding of infrastructure and much more accepting of private investment which, in turn, should lead to a more sophisticated debate about who ultimately controls our infrastructure.

Private participation drives change in India's airports sector

By Amber Dubey (@amberdubey123), KPMG in India

Almost 10 years since the Government of India placed the country's two busiest airports into private hands, many see the sector as irrefutable evidence of the benefits of private participation in funding, developing and operating the country's infrastructure.

*According to **I. Prabhakara Rao**, Chief Executive Officer of the Delhi Airport, privatization has already delivered wide-ranging benefits to travelers, citizens, governments and the national economy. And many more benefits are just waiting to be unlocked.*

It is easy to imagine why foreign visitors landing in Delhi, India pre-2006 often described their arrival as chaotic. Running at almost double capacity and operating out of 40-year-old terminal buildings, the Indira Gandhi International Airport was widely derided as one of the 10 worst airports in the world.

Today, much has changed. Two new terminal buildings have been added, alongside a new runway (one of the world's longest), improved passenger facilities and expanded retail, food and beverage operations. Last year, the airport was recognized as the "World's Best Airport" in the 25-40 million passengers per annum category by the Airports Council International.

"I believe that a key reason behind our success is that we are a privately-owned airport, which means that we can often be more nimble-footed than our counterparts in the public sector," notes Mr. Rao. "Quicker decision-making allows us to be more responsive to demand – whether it pertains to investing in new technologies, proactively engaging with customers to identify improvement areas, or introducing new services and products to enhance the overall passenger experience."

SUCCESS BREEDS SUCCESS

While there were sceptics, that initially doubted the benefits of airport privatization, the program has proven to be a massive success for not only the airport's owners and passengers, but also for the government and the national economy. "The Government of India and the Airports Authority of India have received over US$13 billion in revenue-sharing payments over the past 7 years alone from this privatization agreement," adds Mr. Rao. "More importantly, the airport development has also boosted employment, improved the tourism industry and contributed almost 0.5 percent of the country's Gross Domestic Product (GDP)."

Public perception and political positions on privatized infrastructure in India is also changing. "I firmly believe that the success of the Delhi Airport has strengthened the case for future privatization, as both state and central governments realize that there is significant value to be unlocked through further airport privatization," added Mr. Rao.

Since 2006, at least four new 'greenfield' airports have been developed through Joint Ventures or private consortiums. In some cases – such as the newly announced Mopa Airport in the State of Goa – the government

> This is an exciting time for India; with the right policies and focus on quality, cost and passenger interest, India should be well-placed to achieve its vision of becoming the third largest aviation market by 2020."
>
> **I. Prabhakara Rao,** CEO of the Delhi Airport

has allowed private consortiums to hold a 100 percent stake in the Special Purpose Vehicle created to operate the airport.

WORKING WITH THE PUBLIC SECTOR

Mr. Rao recognizes that India's bureaucracy is working hard to speed up the development of public-private partnership (PPP) models for the sector. "Our experience suggests that government departments are always willing to work in the interest of the project," he noted. "While there may sometimes be a delay in the implementation of certain initiatives, operators and investors also need to be patient and continue engaging with the departments, recognizing that the government has to play the unenviable role of balancing expectations of multiple stakeholders – not all of whom are supportive of the PPP process."

However, Mr. Rao does not suggest that public sector-operated airports cannot achieve similar improvements in customer service. "The Airports Authority of India already collaborates with private operators to share learnings and best practices, particularly around customer service, cargo development and non-core revenue creation," he adds. "But much more can still be done through more effective stakeholder management – both with key stakeholders and the local communities – and in the area of employee engagement and skills development."

MORE TO COME

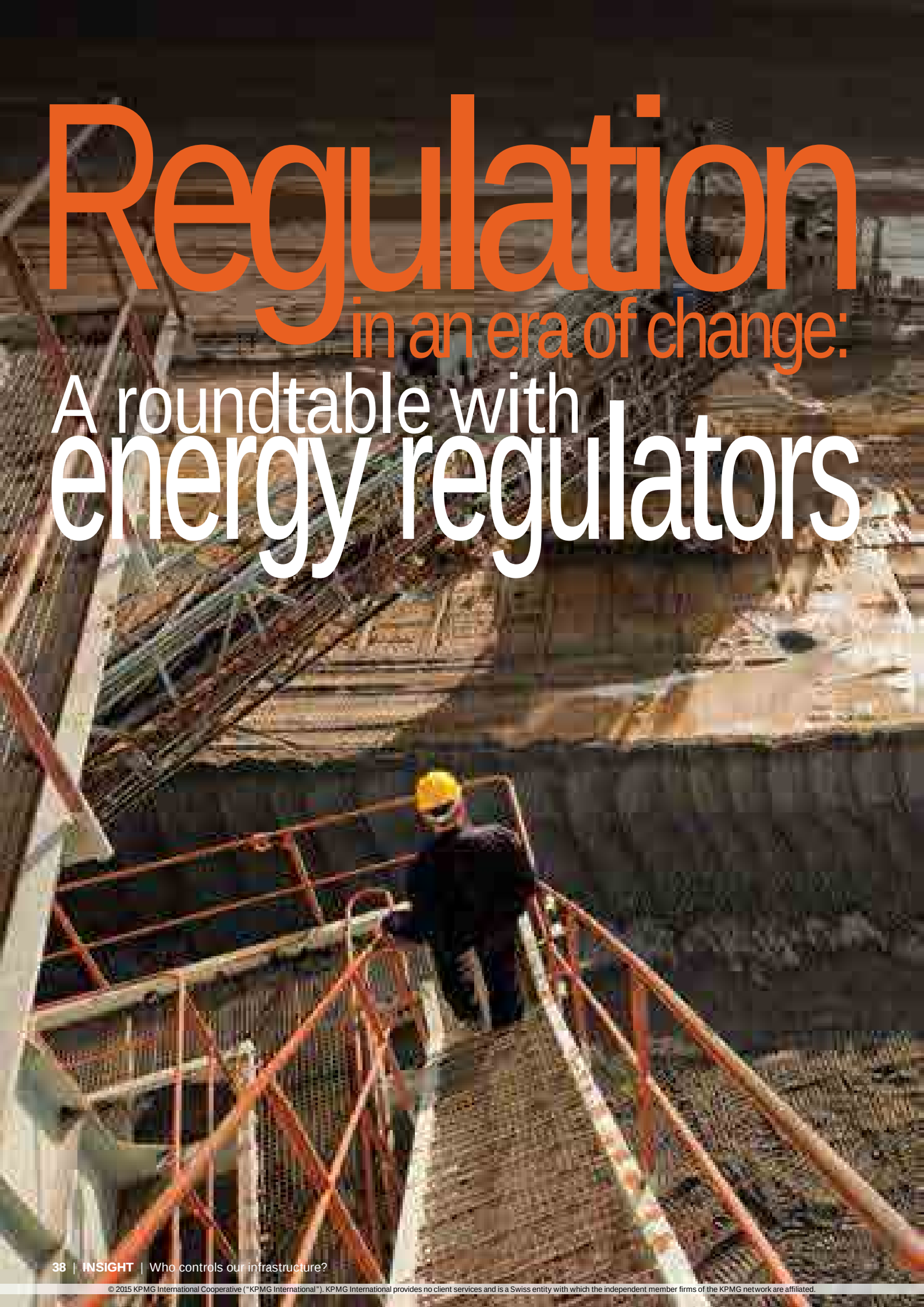
With the Asian aviation market booming, driven largely by a growing middle class and their desire to travel, India is experiencing an era of massive expansion in the sector. New airports, aggressive low-cost carriers, cutting-edge technology introductions and increased foreign investment are all catalyzing a transformation in India's aviation sector. But much more must still be done.

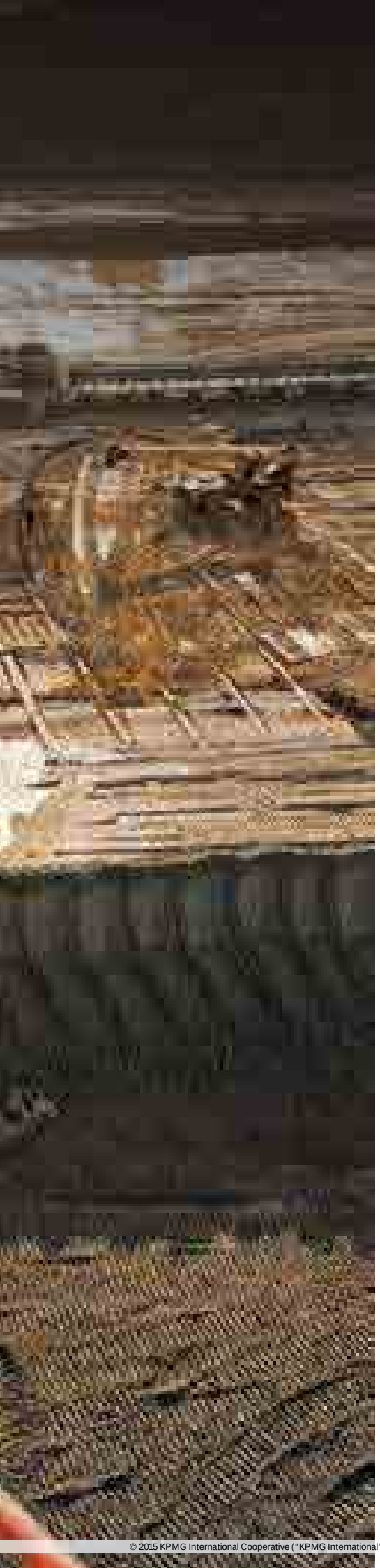
"We believe that private and PPP airport models will be the way forward for India, but to make them sustainable, the whole aviation industry needs to engage and collaborate with policy makers to come up with efficient and rational decisions that will shape the future of the Indian Civil Aviation industry," he noted. "This is an exciting time for India; with the right policies and focus on quality, cost and passenger interest, India should be well-placed to achieve its vision of becoming the third largest aviation market by 2020."

Ultimately, Mr. Rao credits his team and the willingness of key stakeholders to collaborate for the project's success. "One cannot overstate the importance of having a strong team and creating valuable synergies with our stakeholders," he added. "We believe in the idea of fostering an airport community where mutual inter-dependencies bring out the best of enterprises which, in turn, further enhances the overall development of our airport and drives renewed value back to the passengers, airlines, government stakeholders and investors."

Regulation in an era of change:

A roundtable with energy regulators





Regulation has – and always will – play a key role in defining who controls infrastructure. But as the pace of technological, economic and social change picks up speed, today's regulatory regimes are under increasing pressure to shift their focus away from traditional cost-reduction objectives and towards a broader set of objectives that protect consumers while still delivering investor certainty and clarity.

For this edition of Insight Magazine*, we sat down with three former energy sector regulators –* ***Alistair Buchanan****, the former CEO of the UK's energy regulator Ofgem;* ***Robert Curry****, former commissioner of the New York State Public Service Commission; and* ***Antonio Hernandez Garcia****, former Director General for Energy Policy and Mines with Spain's Ministry of Industry, Tourism and Trade – to try to unravel the regulatory perspective on the changes now pressuring electricity markets around the world.*

Editor (ED): Many jurisdictions around the world are currently considering – or implementing – energy market reforms and, in doing so, are shifting the regulatory stance. What impact has this had over the past few years?

Alistair Buchanan (AB): In the UK, we recognized some time ago that our current regulatory regime wasn't providing the right incentives to drive the type of investment the country required. At the same time, we were painfully aware that consumers didn't really understand how the market operated and how that translated into their contracts and bills.

So in 2012, Ofgem announced a new, more sophisticated approach – one we called RIIO – that tied revenue (the R in RIIO) to incentives and innovation (the two Is) and output – essentially telling the customer what we are doing. So while we wanted to make sure that investors would receive a reasonable rate of return, we also wanted to inspire participants to deliver outputs more efficiently while still investing in technical and commercial innovation and promoting greater transparency for consumers.

Robert Curry (RC): The path in the US hasn't been as clear as that of the UK. We've seen a variety of different approaches to energy market reform depending on the state and the level of involvement from the particular legislature. What we saw with the last round of regulatory reform in the energy sector in the late 1990s was that in some states – such as California – regulatory change was largely led by the legislature and then implemented by the regulator. In other states (such as New York) the regulatory agency took more of a leadership role and changed the rules without any real legislative authority.

The reality is that it is tremendously difficult for the US Federal Government to create and implement any long-term goals for the energy sector, in part because 'ownership' of the issue in Congress is split between almost 20 different committees, each with their own agendas and objectives. And ultimately, that makes it difficult for government to cede power of oversight to regulators.

Antonio Hernandez Garcia (AHG): I think Spain is living a different moment than the US and the UK. In fact, following an aggressive privatization program in the late 1990s and early 2000s, and the unforeseen and significant demand reduction entailed by the economic crisis experienced since 2008, Spain now has a marked overcapacity in many infrastructure sectors including energy. Therefore, regulators are not mainly focused on encouraging new foreign investment but on ensuring that infrastructure continues to operate efficiently and sustainably.

In fact, a combination of sustained investment in the energy sector over the past decade with a significant demand drop explain the overcapacity. This situation has been very harmful for the electricity sector in particular, since a relevant tariff deficit has

appeared, amounting close to EUR27billion. By 2010, estimates suggested that the deficit from this energy imbalance was adding about EUR2.3 billion to the government debt every year and that, in turn, was shaking investors' confidence.

ED: Regulatory change can either inspire investment or dampen it. How does this reality influence the way regulators implement change?

AB: When we were planning the move from the traditional cost-focused approach and towards the ideas of RIIO, we understood that – without clear guidance for the future – investors would likely delay any investment decisions until we delivered and explained the new model. As such, we were very focused on ensuring that we provided surety to participants about key aspects of the regulatory regime that would not change – protecting cost drivers from inflation, for example, or the rewarding of payments at the beginning of the cost control period.

In doing so, we were able to provide enough clarity to the investors to give them the confidence to give us the time and leeway we needed to rework completely the regulatory process for the UK.

RC: I think both the US and the UK have traditionally appealed to investors that were focused on having a high degree of certainty on the return on their investment dividends or the payment of the coupon on debt. Simply put, it is a large part of the state regulators' job to ensure that the operating utilities have the capital necessary to fulfil their plans and keep the lights on.

I think today, however, regulators really need to take a step back and ask themselves what their objectives should be in order to respond to all the new demands in the market. Is it to drive efficiency? To catalyze innovation? To secure investor returns? Or is it to protect the consumer from price and availability shocks? I think the answer depends on the jurisdiction.

AHG: I'd argue that there are a number of ways to use regulation to deliver investor confidence. As most people know, Spain recently underwent a change in regulatory stance within the energy sector and – while the change itself may have created some immediate uncertainty – the long-term benefit has been the elimination of the harmful tariff deficit which has long been a big concern for investors.

We've recently seen a significant uptick in investor interest in Spain's energy sector and many investors are coming back to Spain; not just infrastructure funds, but also sovereign wealth funds and others that take a longer-term view of the markets.

ED: If you were just starting your regulatory job today, what would you want to do differently given the changing environment?

AHG: I think the three key drivers for me would be stakeholder engagement (listening to the opinion of all involved agents), the need to balance investor returns against consumer protection, and regulatory certainty and clarity.

Stakeholder engagement can often uncover some really smart opinions that may need to be considered when drafting or reforming regulation. Regulators should also always remember that – at the end of the day – it is the consumer that is funding the investment, either through tariffs or through public debt and so their needs must be balanced against those of the private sector and investors.

Finally, I do believe that regulators should always try to be very clear and very predictable because a lack of clarity can have a direct impact on longer-term risk premiums which, ultimately, just drives up cost overall.

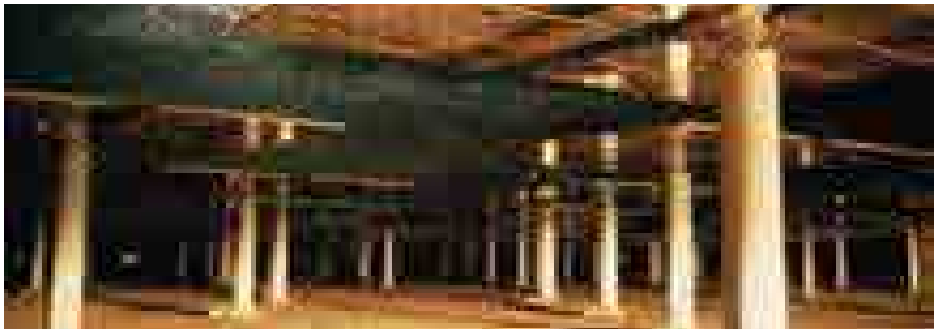
AB: This would be a very interesting time to be a regulator. If you look at the trend, we've moved from a cost-control stance to more of an incentive-based stance and – looking forward – it's clear that we're looking

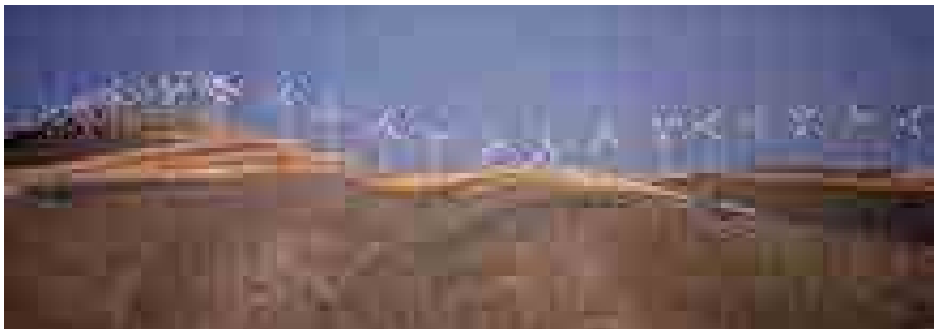
at an entirely new environment brought on by not just an evolution in energy but possibly a revolution in the way energy is distributed at a very local level as battery technology matures and people start to think about connecting directly to their local wind farm.

I think the key for regulators going forward is going to be their ability to carry their various constituencies along with them in whatever change is required. Spending years on public consultations just to find that you lack the support of a key stakeholder only wastes time and weakens investor confidence. Even if it means ending up with a solution that achieves only 90 percent of your goal, that's a pretty significant win given these complex macro governmental change scenarios.

RC: I'd agree with everything that Antonio and Alistair have said. I'd add that one of my first orders of business would be to ensure that I had the legislative support and clarity that would be required to enact the necessary changes.

The problem with energy is that it's a very politically-charged topic in the US and nobody wants to be left holding the blame for market failures. But the reality is that – without legislative support and leadership – any market reforms are doomed to fail; it's a self-fulfilling prophecy.





GETTING REGULATION RIGHT

Dr. Matt Firla-Cuchra (@mattcuchra_kpmg), KPMG in the UK

Regulation is necessary because of market failures (hold that thought); as tempting as it might be, it's not the right tool to address other issues like social policy or subsidies. And while it aims to improve welfare, regulation often brings risks – it can create wrong incentives, amplify market distortions and impose significant additional costs. In fact, much regulation is created to address distortions and imperfections created by the existing regimes.

A regulator should always consider first which exact market failures he/she is trying to address and be very clear about it. This is to ensure that regulation is targeted and proportional, and applied only where it can actually help. But that's not an easy question in complex markets like energy. Where targeted regulatory intervention is difficult, it's often tempting to broaden it to 'sort it all out' for the 'general public good'.

The energy sector is particularly challenging to regulate because of its complexity, multiple constituent markets, and multiplicity of market failures. The latter include everything from the monopoly position of networks infrastructure (could lead to higher prices, reduced supply/quality or underinvestment), through distortions in the underlying commodity markets (sending inefficient short–term price signals for long-term investments), to investors' unwillingness to take on long-term risks in building new energy infrastructure at any price (due to the risk of asset stranding or wrong price signals). It's difficult to get it all right and still preserve commercial interactions in a private industry.

One 'solution' is to regulate to determine the exact outcomes deemed desirable. Regulators complain that they have to compromise with other stakeholders, but this assumes that they know what 'good' looks like. Typically, they don't and what is optimal for the market as a whole is not really obvious – besides, a regulator is not a central planner. Regulators need to implement government policies, not attempt to invent them. But this distinction is sometimes hard to make – for example, balancing affordability and security of supply is fundamentally a policy question, yet in practice it is often determined by regulatory decisions.

So where it can, the regulator should create mechanisms for market participants to correct their behavior rather than choose the optimal market outcomes for them. Smart regulators recognize that making regulated companies listen to their customers and create their own plans is likely a better idea than making them listen to the regulator himself.

Urban renewal: The secret to Sydney's success

Few cities have taken on the task of urban regeneration and renewal as actively or as purposefully as Sydney, Australia. From the redevelopment of disused docklands at Barangaroo through to the creation of new inner-city parklands through its Central Park and Green Square projects, Sydney continues to attract international recognition for its success in renewing urban areas.

The Master Plan for any city is the responsibility of the public sector but partnerships with the private sector are vital to delivery. To learn more about Sydney's success, ***Graham Brooke (@gbrooke737)*** *with KPMG in Australia sat down with* ***David Pitchford****, CEO of UrbanGrowth NSW, the organization tasked with delivering the urban transformation program, to explore some of the challenges, objectives and strategies driving this city's vision.*

Graham Brooke (GB): Sydney is already widely-regarded as a world-class city. What is driving Sydney's passion for urban renewal today?

David Pitchford (DP): Just like many other cities, Sydney wants to enjoy all of the advantages that come from being a truly global city, meaning we need to constantly strive to remain internationally competitive and globally relevant. And the competition is fierce; we're not just competing with traditional leaders like New York, London or Hong Kong. Today there are countries right across Asia Pacific

and around the world that are all looking for ways to modernize their platform and compete on the world stage.

Yes, Sydney has always been seen as a world-class city, but much of that focus has come from tourism and our abundant attractions. The challenge today is that we need to think beyond tourism and beautification to really understand what it means to also compete economically.

GB: Clearly, there are different infrastructure levers that can be pulled depending on whether you want to focus on economic growth versus beautification. How is that shift impacting the city's investment prioritization decision process?

DP: I believe economic infrastructure is critically important to becoming a global city, particularly investment into those assets that enable the development of industry, the creation of knowledge-based jobs, the advancement of innovation and – crucially – the attraction of talent.

But the reality is that there is always so much that could be done and many of the projects on the list are massive undertakings. So we really need to be disciplined about establishing an achievable and workable platform and then we need to stick to it. What's massively apparent from similar projects around the world is that those who take on too much tend to fail while those that are focused tend to achieve their objectives.

GB: Has Sydney struck upon a 'winning' formula for delivering infrastructure?

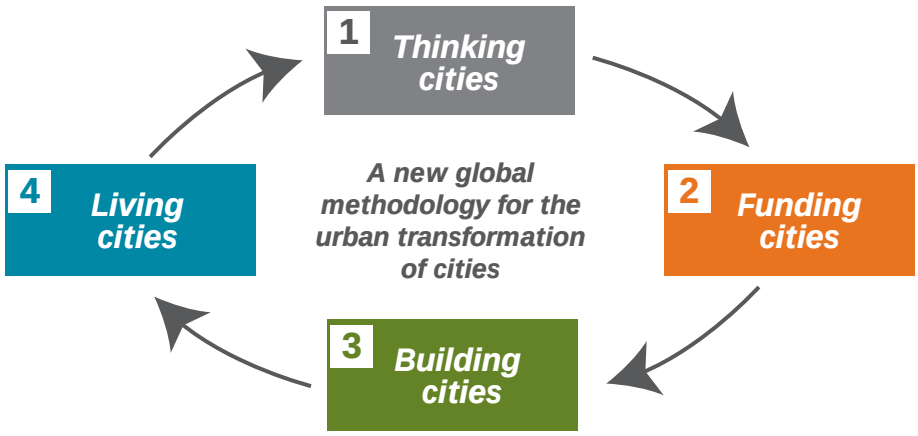
DP: Quite the opposite, actually. What we've found is that there is no 'one-size-fits-all' approach to delivering projects and much depends on the complexity of the individual project, the outcomes you want to achieve and the private sector organizations you are partnering with.

What that means is that we need to be really flexible in the way that we approach delivery and we need to be willing to do things differently so that we're always making sure that both parties get what they need out of the transactions and the city gets the optimal result for its investments.

GB: What is guiding the long-term plan for Sydney? Does the city have a vision for where it wants to be in the next 20 years?

DP: We've been very focused on what we want Sydney to represent in the future. We have actually developed our own methodology which we call the City Transformation Life Cycle. Essentially, there are four dynamic elements to the cycle. First is what we call 'Thinking cities' and this is where we bring together all of the ideas, ambitions, aspirations and needs that define what we want Sydney to be.

UrbanGrowth NSW: City Transformation Life Cycle™



The second phase , 'Funding cities', considers all of the innovative ways to finance the aspirations outlined in the first phase. 'Building cities', the third phase, is actually where most projects in other cities tend to start – design, shape, land use and transport planning. We also see a fourth phase, the 'Living cities' phases, where we then focus on creating great places and great spaces that make the city more resilient, happy and prosperous. And it's all quite dynamic because we always need to be changing.

GB: What role has government played in supporting Sydney's urban renewal goals?

DP: UrbanGrowth NSW is actually a State-Owned Corporation, so clearly there is buy-in from State government on the need for urban renewal and transformation.

> What's massively apparent from similar projects around the world is that those who take on too much tend to fail while those that are focused tend to achieve their objectives.
>
> **David Pitchford,**
> CEO of UrbanGrowth New South Wales

But all levels of government have been hugely supportive. In fact, I think our various governments are showing great courage in working together to push back the political and public juggernaut in a way that provides us some room to actually take the time that is needed to do effective planning and assess our options.

Likely the greatest catalyst from government, however, has been the introduction of clear governance structures and dedicated authorities. We had a history of talking about action but never getting past the talking phase; clear leadership and lines of authority allows everyone to start acting.

GB: What do you credit with Sydney's urban transformation success?

DP: I think there are three things that we have done in Sydney that have helped us move towards achieving our goals for the city. First is that we weren't afraid to do things differently and to start from a different point. We think about what we want to achieve and how we might finance it long before we sit down to start drawing up designs, and that's a very different approach than most cities take.

The second thing is collaboration. We've been very careful to collaborate with all stakeholders to achieve our goals. We even have somewhat formal collaboration agreements with the government secretaries and the CEOs of various state agencies that are involved in our projects.

I think our third real advantage has been ambition. And it's not just that we have an ambition to change, but we also have the ability to articulate that ambition and then structure and drive its adoption so that everyone is working together to achieve that goal and purpose.

GB: Thank you, David. I think we all look forward to seeing how Sydney transforms over the coming years and decades.

Looking to the private sector to cure the healthcare system

By Tiago Martins, KPMG in Portugal

As healthcare costs continue to rise and governments – particularly in Europe and parts of Asia – start to grapple with growing demand for health services from an aging population, many are now looking to the private sector to help bridge the gap.

*As **Vasco Luis de Mello**, CEO of Vila Franca de Xira Hospital in Portugal, can attest, the introduction of private sector players has been key to increasing capacity and driving improved value for money for Portugal's healthcare system. But building and operating a hospital also comes with its own unique challenges and complexities.*

ENCOURAGING PRIVATE PARTICIPATION

Private hospitals are not a new concept in Portugal. Indeed, the private sector has been involved in the delivery of health services since 1995 when Hospital Fernando Fonseca was handed over to José de Mello Saúde – a private healthcare services provider – as the first healthcare public-private partnership (PPP).

But the privatization process has been slow and overall healthcare costs have continued to climb. In response, Portugal's government has become increasingly focused on encouraging greater private participation in the building, maintenance and operation of health facilities as a way to increase capacity and drive value for money for government investments.[1]

In 2005, with the objective of building four new hospitals – three to replace existing facilities and one as a fully 'new' service – Portugal's government announced a new PPP program that would require bidders on each project to bring together both the infrastructure and the operations under one consortium. Winning consortiums would sign two separate contracts – one for the building of the asset and maintenance for 30 years and another as a 10-year clinical operations contract.

GETTING IT RIGHT FROM THE BID PHASE

According to Vasco Luis de Mello – who serves as both a Director at José de Mello Saúde and as CEO of Vila Franca de Xira Hospital – this approach would deliver important long-term benefits. "Making the construction company responsible for a 30-year lifespan of the facility meant that everyone was focused on delivering very high-quality solutions that would achieve the best total lifecycle costs for the investment; it really added a very different set of incentives for the developers and designers."

The approach also added new complexity. Given the need to ensure a high level of state oversight and quality requirements, the bidding process for the tenders was particularly detailed and resource-intensive. "On the clinical side, the bid requirements included more than 80 different categories, each of which got

1 http://www.euro.who.int/__data/assets/pdf_file/0019/150463/e95712.pdf

> We knew that if we could deliver the right incentives, the right motivation and the right tools, we could really improve the way that the existing facility ran."
>
> **Vasco Luis de Mello,** CEO of Vila Franca de Xira Hospital

to a very granular level. For example, as part of the bid process, we had to identify every piece of equipment that would go into every room, what software we would use and what personnel would be required to operate the facility," noted Mr. de Mello.

BALANCING CONTROL WITH AGILITY

While the government may have required substantial detail and transparency, they also provided bidding organizations with significant freedom to control key elements of the planning and design. "Allowing the bidders to propose their own designs and functional layouts during the bid process meant that the government could profit from the private sector's considerable experience in clinical operation design while, at the same time, giving the eventual operators more control into how the facility will run on a day-to-day basis," he added.

However, hospitals are highly-technical facilities and hospital technology is constantly changing which can create challenges as designs and assets are developed. According to Mr. de Mello "It really requires an architect with insight into how hospitals work – how traffic flows within the halls, what areas need to be restricted or how patients move through the care pathway should all heavily influence the design. We also embedded an engineer into the construction team so that any unanticipated issues could be solved quickly during the construction process."

IMPROVING THE OLD TO PREPARE FOR THE NEW

Likely the biggest challenge, however, was that the Vila Franca de Xira Hospital project was to replace an existing facility. As such, the winning consortium would be expected to take over operations in the existing facility while the replacement hospital was being built, manage the transfer of services to the new hospital once it became operational and then manage and operate the new facility for the remainder of the 10-year term.

While the challenge of shifting an operating hospital from one facility to another in 7 days was certainly daunting, Mr. de Mello suggests that the more challenging issues often relate to people and processes. "These people had been working at that facility for years, while embracing a specific culture, and we knew that we couldn't just arrive one day and change everything – we would never get their full involvement if we took that approach. For us, it was all about building respect and trust by listening and involving the clinical and operational staff in the process."

At the same time, with cost savings, operational efficiency and performance at the top of the agenda, Mr. de Mello's team wanted to prove that they could also drive improvements at the old facility while the new development was being constructed. "We knew that if we could deliver the right incentives, the right motivation and the right tools, we could really improve the way that the existing facility ran," he noted.

Subtle changes in the operating room, for example, raised the OR output by almost 50 percent in one month while improved management tools and systems provided management with a way to track and measure the impact of their changes. "People are not inclined to believe without evidence, so we needed to make sure we could show that our activities were creating real value and benefits for the clinical staff and for the patients," added Mr. de Mello.

A MODEL FOR THE FUTURE

While these initiatives were important in helping drive down costs and improve service, they also helped the existing employees grow accustomed to change and prepare for their roles in the new facility which – at three times the size of the current structure – would take some adjustment. "Everything ran wonderfully the first day but – as with any living project like this – we still needed to spend the next year or so making adjustments and adapting our sequences and processes in order to optimize them according to the physical infrastructure."

For Mr. de Mello, the team's motivation and enthusiasm were key factors in the project's success. "For this type of project, you really need people that are enthusiastic, optimistic, hardworking and comfortable with change. It's really about having positive tension within the project so that people set ambitious goals and then celebrate their accomplishments," he added.

Not surprisingly, Mr. de Mello is proud of what he and his team have accomplished. All of the key indicators show that the hospital is operating at a far higher level than originally anticipated in terms of volume and quality. And he clearly believes that the approach taken by Portugal's government will be borrowed in other markets across Europe and the world.

"I see a clear opportunity to expand this model across other geographies and other places in the world - we have delivered clear benefits for the patient, clear benefits for the professionals and clear benefits for the healthcare system and the state. Besides that, nowadays, helping finance healthcare is very important to the future success of our country."

The new Vila Franca de Xira Hospital boasts more than 8 floors totaling almost 40,000m^2 of clinical area, 9 operating rooms, 280 beds, a heliport, shops and 844 parking spaces

Going where the opportunities are:

The evolving world of infrastructure investment

By Craig Walter, KPMG in Canada

> “We are now in a new ‘third phase’ in the evolution of institutional investment, characterized by an aggressive focus on non-traditional and emerging markets and a growing appetite for higher-risk investments.”

The infrastructure investment environment continues to evolve. New long-term capital from a growing and global group of institutional investors is driving up competition and pressuring returns in ‘core’ developed infrastructure markets.

A growing number of the more sophisticated investors are now starting to explore how they can best leverage their experience and capabilities in order to uncover and secure new and more attractive investment opportunities. This is leading to a dramatic shift in investment patterns, with more capital focusing on riskier geographies and business models in search of superior risk-return tradeoffs versus what is now available in core markets.

Infrastructure as an ‘asset class’ hit its stride 15 or so years ago when Australian and Canadian institutional investors began investing long-term capital into infrastructure in a meaningful way. These investors were attracted to infrastructure for both its portfolio diversification benefits and the way its long-term, lower-risk and inflation-protected cash flows matched the long-term liabilities of pension funds and insurance companies. In this ‘first phase’ of infrastructure investment, most strategies were focused on less risky ‘core’ infrastructure (regulated utilities, mature toll roads, and contracted power) in core markets – Australia, Canada, the UK and the US for some, the OECD for others.

Not surprisingly, attractive returns earned by early movers resulted in both a wave of capital targeting infrastructure and more aggressive investment strategies to win deals, including excessive leverage and aggressive growth assumptions in areas like traffic and revenue, for instance. Some of these strategies were exposed in the aftermath of the Global Financial Crisis (GFC) and many investors were forced to restructure, write-down or realize losses. In

the years following the GFC, the 'second phase' of infrastructure investment, some of the more sophisticated investors adapted by beginning to change the composition of their investment teams (building diverse skill sets, including operational capability), their approach to transaction evaluation (much more thorough), and their level of involvement as an owner in their investments (much more proactive).

As was the case near the end of the first phase of infrastructure investment, we are now seeing another wave of new capital targeting infrastructure. At first, funds started to flow from investors in core infrastructure markets such as the UK, US and Europe. But it has quickly been followed by new sources of long-term capital from the emerging markets, particularly the Middle East and Asia.

While new investment flows towards infrastructure is certainly a welcome development, the reality is that to date, rather than increasing the number of projects being funded, much of the new capital has been earmarked for just a handful of 'mature' infrastructure markets and "core" sectors where risks are better understood and returns more reliable. Regulated asset sales in places like the UK, Canada, Australia and Western Europe, for example, have been fiercely contested.

Rather predictably, the high level of competition and significant increase in capital has led to reduced returns for core infrastructure in core markets.

THE SEARCH FOR BETTER RETURNS

Unwilling to settle for depressed IRRs, and armed with the valuable lessons of the GFC and now-significant experience assessing, pricing and managing risk, a growing number of the more sophisticated funds are now starting to branch out beyond core sectors and markets in search of better returns.

As a result, we are now in a new 'third phase' in the evolution of institutional investment, characterized by an aggressive focus on non-traditional and emerging markets (such as Mexico, Peru, Brazil, India, Turkey, parts of South East Asia and Africa) and a growing appetite for higher-risk investments. And we are starting to see investors think more creatively about how they can create innovative partnerships and structures to more effectively deploy capital.

Last year, for example, the Canadian Pension Plan's Investment Board (CPPIB) invested into a wide range of emerging market assets including a pipeline business in Peru and a toll road portfolio in India. In April, Quebec's Caisse de Depot et Placement (CDPQ) invested in a portfolio of toll roads in Mexico and, in May, the Ontario Teachers' Pension Plan Board (OTPP) and PSP Investments announced a partnership with Banco Santander to acquire and develop various renewable energy and water projects in markets like Brazil, Mexico, Uruguay and Spain.

A SHIFT IN RISK APPETITE

Ultimately, we see these trends resulting in a meaningful shift towards riskier areas of investment. For some, this will mean investing into assets and companies in the emerging markets. For others, it may mean taking on projects with more development risk or investing into companies with greater revenue and/or operating risks. The more aggressive will do all three. And this may prove to provide better risk-adjusted returns than investing in core in any event...

The key to megaproject success

Start with a strategic view

By Gary Webster, Global Head of Capital Projects Leadership

Megaprojects are certainly awe-inspiring. But they can also be extremely risky for governments and project owners. Recent history suggests that the majority of megaprojects currently on planning tables will either stall, go over budget or face significant delays.

But with millions – sometimes billions – of dollars on the line, national reputations at risk and economic growth in the balance, some project owners are now starting to take a more strategic approach. And in doing so, many are finding that they can greatly enhance the potential for project success.

MORE MEGAPROJECTS, MORE RISK

In the world of infrastructure, there are few things as grand or as impactful as megaprojects. Massive structures, eye-popping budgets, intense complexity and the potential for huge benefits all come together to capture the imagination of citizens, governments and investors.

Not surprisingly given the massive demand for infrastructure around the world, most governments are particularly keen on megaprojects. As the most recent edition of KPMG's *Infrastructure 100: World Markets Report* demonstrates, there are literally thousands of megaprojects now underway around the world.[1]

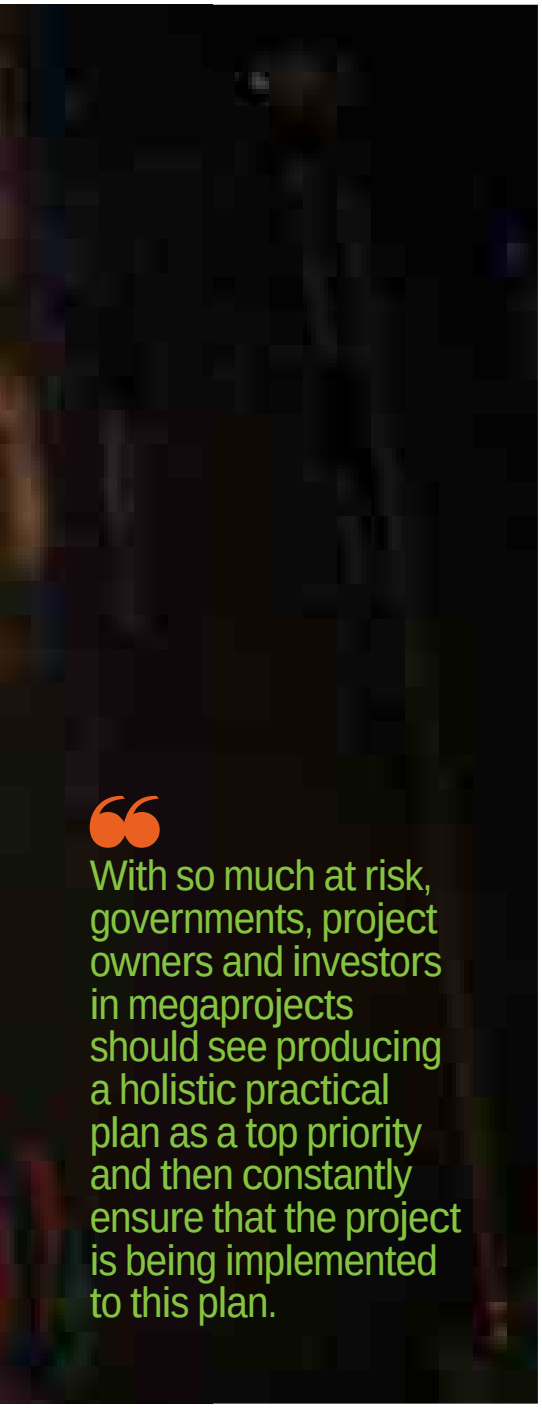
But our experience suggests that most megaprojects are unlikely to achieve their original planned targets. Indeed, in a recent KPMG survey of project owners, just 30 percent said that their projects had been completed within budget over the last 3 years and only a quarter said they had managed to complete their projects within 10 percent of their original timeline.[2] In most cases, cost overruns and delays brought the value of the entire project into question and, with it, the reputation of the owners and investors resulting in serious consequences to executive sponsors.

AVOIDING THE INEVITABLE

The unfortunate reality is that the vast majority of project delays and over-runs could be avoided if only the right information, perspective and experience were to be applied at the outset, with the right project teams overseeing and executing against the plan. The challenge is that few project owners have the right skills or capabilities to achieve this.

Private sector owners tend to bring unmatched industry experience to project planning, but often lack insight into the regulatory, social, political and environmental issues that are so important to a project's success. Public sector owners, on the other

1 *Infrastructure 100: World Markets Report*, KPMG International, 2014
2 *Global Construction Survey 2015: Climbing the curve*, KPMG International, 2015



> With so much at risk, governments, project owners and investors in megaprojects should see producing a holistic practical plan as a top priority and then constantly ensure that the project is being implemented to this plan.

hand, tend to have deep experience (and some influence) over the social, political and environmental aspects but struggle to apply the more 'commercial' perspective required to help industry stakeholders achieve success.

The key, therefore, is in ensuring that the public sector and developers work together to achieve a common goal while simultaneously protecting their core values – regardless of who will ultimately own the infrastructure. This will require both governments and developers to understand each other's challenges, issues and objectives in order to become more informed and collaborative counterparties working together to achieve common goals. Yet while history shows that failure can be lethal to the careers of both politicians and executives, few projects focus on finding the middle ground.

In part, this gap in strategic viewpoint is due to high demand and scarce resources. In Canada alone – arguably not one of the larger infrastructure markets – we have around 400 projects or programs worth more than a half-billion dollars in the pipeline, yet only a handful of people with the right experience and perspective to properly plan and manage them. To make things worse, many of those with the right skills are now close to retirement, creating the specter of even greater skills gaps in the near future.

STARTING WITH THE RIGHT SKILLS

As a result of this gap, most infrastructure megaprojects around the world are being planned, designed and managed by 'technocrats' who often lack the necessary breadth and depth of experience. In some cases, these are bureaucrats with experience in smaller projects who hope to be able to scale-up their experience to megaproject status. In other cases, projects may be initially designed by engineers or project promoters who are focused on the more technical aspects of the project rather than the wider strategic aspects.

Unfortunately, our experience suggests their projects tend to fail more often than not. The reality is that it takes a very special skill set to fully understand, oversee and manage megaproject delivery – one that not only encompasses the technical and socio-economic aspects, but also the wider political program management and strategic leadership requirements.

For their part, boards and executives need to understand the complexity of the megaproject environment, and be prepared to provide consistent active stewardship and oversight of both the business case planning and – likely more importantly – the implementation.

This, in turn, will require executives and boards to receive regular (and full) briefings; to understand and ask the right questions to achieve all of the project objectives (not just cost and schedule); and to be much more aware of the consequences of their decisions on the project teams. Simply put, they need to ask the right questions of the right people at the right time.

Beyond supporting the development of a robust holistic plan, boards and executives must also ensure that all 'people' systems and reports are focused on implementing the plan in a way that reduces the potential for surprises to key shareholders and stakeholders (I'm often amazed at how few projects actually do this).

Selecting the right project leaders will also require careful attention from the board. The ideal candidate would bring together a strong commercially-based approach with an executive mind-set and deep project implementation skills. They must be able to think strategically and broadly about the environment in which they are operating and be able to lead and delegate efficiently. And they must be able to navigate the complex social and political stakeholder environment in which the project will be delivered. But those with this combination of skills and experience are few and far between.

GETTING THE RIGHT ADVICE

With little suitable capability in-house, most project owners – both public entity and privately-led – will likely need to focus on identifying, recruiting and retaining external advisors with the right skill sets and experience to help plan projects of this size and intensity. Then the trick will be pairing them up with talented internal managers to ensure that skills and experience are properly transferred in order to support the 'next phase' of megaproject delivery.

But project owners be warned: a theoretical approach to project management is no match for a practical approach. Many advisors – both small and large – will tell you they know what it takes to manage a megaproject strategically but few have put their skills to the test. In an environment where every mistake can cost many millions of dollars, this lack of practical experience can mean the difference between ultimate success and public failure.

THE MOST IMPORTANT STEP

With so much at risk, governments, project owners and investors in megaprojects should see producing a holistic practical plan as a top priority and then constantly ensure that the project is being implemented to this plan. This sounds simple but unfortunately doesn't happen as much as it should. The bottom line is that issues found in the planning phase that cost a dollar to fix will cost 10 times as much in the design phase; but those found in the implementation phase could cost hundreds and thousands times more than they would have, had they been caught in planning.

As a result of this, and given the extreme pressure on government budgets, investor demands and public scrutiny that comes with megaproject delivery, securing the right people with the right skills who can acomplish this will likely be the most critical step project owners can take.

Federal, regional and municipal

As the political pendulum across major infrastructure markets swings towards local authorities, those in central government are keen to remind people that infrastructure is often a national priority with a collective national benefit.

Infrastructure is not something that sits neatly within one layer of government. And while, traditionally, the balance of power in infrastructure development sits with the layer of government that funds it, many are now starting to ask who should ultimately be responsible: federal, regional or municipal?

By John Kjorstad (@JohnKjorstad), KPMG in the UK

Singapore's founding father Lee Kuan Yew died in March, evoking reflection for many of the city-state's 5 million residents. The 91-year-old helped transform a small colonial port city in Southeast Asia into an independent and successful nation that has become one of the world's premier financial centers. Singapore's success is built on its strategic geography and the government's uncanny ability to deliver world class infrastructure that enables it to attract and manage economic growth.

Singapore is unique among countries trying to develop essential infrastructure. It represents one governance extreme where there is virtually no difference between national and local interests. In contrast, much larger geographies like the United States, Canada, Australia, Brazil and India lean more towards local entities with states, provinces and cities leading the development, prioritization and funding of local infrastructure. Other countries are more balanced – orchestrating from central government and executing locally.

Traditionally, the balance of power in infrastructure development sits with the layer of government that funds it. Central governments control broad budgets and have access to larger pools of capital. Local governments better understand constituent needs and the user's ability to pay.

Which model is correct? Who should pay for our infrastructure? Who is responsible for our infrastructure?

LESS MONEY FROM THE TOP, MORE NEED FOR LOCAL FUNDING

Earlier this year, comedian John Oliver presented a robust satire on infrastructure in the United States via his HBO series *Last Week Tonight*.[1] He highlighted municipal issues such as burst water mains and "deadly" potholes as well as state and federal problems maintaining aging bridges and hydroelectric dams. Oliver illustrated the challenge facing the country's infrastructure: Everyone wants to see something done about it, but no one agrees how to pay for it.

Gone are the huge federal funding programs that supported the development of America's interstate highways and rural electrification. What remains is both inadequate and politically difficult. For example, the federal gasoline tax was once the primary central funding mechanism for transportation infrastructure in the US. However, it has remained unchanged for more than 20 years – its purchasing power diminished by inflation and more fuel-efficient vehicles. Meanwhile, traffic volumes continue to rise causing greater wear and tear on America's roads and bridges.

The declining state of America's infrastructure – and the federal government's inability to act on it – has sparked a renewed national debate about funding. Increasingly, state and municipal planners are having to be creative and rethink how they will pay for new schemes as well as the refurbishment and maintenance of existing structures. The Pennsylvania Rapid Bridge Replacement Project is one such public-private partnership (PPP). It is part of the state's comprehensive transportation funding plan and majority financed by more than US$700 million of Private Activity Bonds, debt instruments issued by state or local governments whose proceeds are used to construct projects with significant private involvement.[2]

1 http://www.citylab.com/commute/2015/03/john-olivers-solution-to-americas-infrastructure-crisis/386549/
2 https://ijglobal.com/articles/95616/plenary-and-walsh-close-on-penn-bridges-ppp

As local governments begin to take more control over the planning and funding of their infrastructure, the role of a central government shifts from financier to facilitator. Last year, Infrastructure UK's (IUK) government guarantee scheme was deployed in the United Kingdom to support the financing of the Mersey Gateway Project – a US$896 million (GBP600 million) road bridge spanning the River Mersey in north west England.[3] The project was led by a small local authority instead of the Department for Transport. IUK wrapped the senior debt, but the local council is shouldering most of the financial risk and will make regular availability payments to the concessionaire funded through toll revenue.

MORE LOCAL FUNDING, MORE DEVOLUTION

As a result of the first trend, states and municipalities – particularly those in Europe – may seek greater devolution from central governments in order to manage their own finances and fund local infrastructure. Devolved powers already exist and are expanding in Wales, Northern Ireland and Scotland leaving much of England feeling powerless outside of Westminster and the UK's southeast capital region. However, five northern cities led by Manchester have strategically formed "One North" creating a regional US$22 billion (GBP15 billion), 15-year transport plan that they've presented to central government.[4,5]

How taxes are collected and distributed has a huge impact on infrastructure investment strategies. Centralized taxation and distribution give enormous power to the top layer of government and a national agenda, while regional and municipal taxation empowers the bottom favoring local plans. If local governments take more control of their infrastructure, they need more control over financial resources.

3 https://ijglobal.com/articles/91288/mersey-gateway-bridge-ppp-uk
4 http://www.manchester.gov.uk/downloads/download/5969/one_north
5 http://www.bbc.co.uk/news/uk-28654134

NATIONAL BENEFITS FROM INFRASTRUCTURE INVESTMENT

As the political pendulum across major infrastructure markets swings towards local authorities, those in central government are keen to remind people that infrastructure is often a national priority with a collective national benefit. It was announced in March that publicly-funded infrastructure projects in the UK will be branded with a Union Jack plaque to recognize taxpayers' key contribution in funding vital projects.[6] Infrastructure may be local, but the economic benefit from building roads, railways, and power grids – even hospitals and schools – can equally be felt nationally. These projects help countries compete by supporting health and well-being, skills development, and international trade.

There is also a scenario where privatized infrastructure benefits national government over the local. Privatization can shift revenue from a locally-owned public utility or asset into federal income taxes paid by the new private owner. Whereas before, that money would have been recycled locally, it becomes more generic as tax paid into a national treasury after privatization.

LAND PLANNING, AND JURISDICTIONAL CHALLENGES

Infrastructure is not something that sits neatly within one layer of government. It must be coordinated to comply with regulations and national standards. Some projects cross borders and require multiple approvals. Others need effective conflict resolution. A suburban railway may cause jurisdictional disputes between competing municipal, regional and national interests. Other projects such as nuclear waste disposal or a cross-border pipeline project might be deemed nationally significant even if locally unpopular. In these cases, national governments and high-ranking judiciaries may need to intervene.

ENABLING LOCAL INFRASTRUCTURE THROUGH NATIONAL OR REGIONAL PPP PROGRAMS

Perhaps the greatest non-financial contribution a national government can make to support local infrastructure is enabling private investment. Public-private partnerships require legislation enacted nationally or at an empowered regional level. Once that government entity has established the ground rules for engagement and set a clear precedent, the model easily trickles down to lower levels of government.

When Brazil was initially developing their model in the mid-2000s, the country established a PPP department in the Federal Planning Ministry to manage the process. The ministry then set out to demonstrate the model and use the first project in each sector as a benchmark for that sector.[7] Brazil now has a vibrant PPP market successfully closing US$12.4 billion across 41 separate PPP transactions according to data from IJGlobal. Recently, the US$1 billion Água São Lourenço water supply system PPP, by the state government of São Paulo.

Few municipalities have successfully launched their own PPP programs independent of broader government guidance. Chicago, Illinois in the US is one rare exception.[8] The city was the first American local government to pursue and successfully close PPPs on its own. Three separate deals involving a toll road and two parking systems have net nearly US$3.6 billion for the city's residents and taxpayers. Other American cities have worked with their state governments to replicate Chicago's success – slowly building a competitive American infrastructure market and attracting a wide range of domestic and international investors.

This competition to attract private capital investment is healthy, and can also be credited in Singapore's unlikely success. Speaking in New Delhi, India at the 37th Jawaharlal Nehru Memorial Lecture in 2005, Lee Kuan Yew said: "When most of the Third World was deeply suspicious of exploitation by western (multinational corporations), Singapore invited them in. They helped us grow, brought in technology and know-how, and raised productivity levels faster than any alternative strategy could."[9]

Lee's vision directly impacted Singapore's economic success. He didn't have to cut through layers of government to realize this vision, but that doesn't mean it was any easier.

6 https://www.gov.uk/government/news/new-union-jack-infrastructure-plaques-announced
7 http://www.bnamericas.com/news/infrastructure/Official:_Fed_hwy_BR-116_BR-324_PPP_to_serve_as_model_for_future_projects
8 http://www.cityofchicago.org/city/en/depts/fin/supp_info/public_private_partnerships.html
9 http://scroll.in/article/715572/Singapore's-Lee-Kuan-Yew-on-why-he-departed-from-Nehruvian-welfarism

The remarkable RESURGENCE OF RAIL

By Daniel Loschacoff (@GlobalRailKPMG), Global Head of Rail, dloschacoff@kpmg.com

Once derided as old-fashioned and boring, today's rail sector is positively sizzling. Old lines are being rehabilitated; new – often high speed – lines and metros are being developed; and new sources of investment are flowing into the sector. Welcome to the remarkable resurgence of rail.

There is nothing boring about today's rail sector. Flush with new investment and driven by growing public demand, the rail sector has – rather suddenly – surged back into the hearts and minds of politicians, investors and average citizens.

A WORLD OF ACTIVITY

As this *Spotlight on Rail* clearly illustrates, the rail sector is enjoying massive growth in almost every geography and market. In many places, conventional rail lines are being upgraded and revitalized – South Africa's rolling stock procurement program (see page 68) is expected to utterly transform rail service in that country – while, in other places, new systems and lines are rapidly being developed; the articles on the Doha metro (page 56) and the Sao Paulo metro expansion (page 64) examine two such examples currently underway.

It's not just conventional rail that is enjoying the resurgence – so, too, is the High Speed Rail sector. Plans for new High Speed Rail lines are in development in places like Saudi Arabia and Africa; calls for new High Speed Rail services are growing in Europe and Asia; and long-awaited new High Speed Rail projects are currently under development in the UK and the US.

EVERYONE WANTS MORE RAIL

In part, this resurgence of rail is related to a number of macro forces at work around the world. Shifting demographics in the developed world and massive urbanization in the developing world has reset public expectations about urban planning, connectivity and public transit. At the same time, growing environmental awareness and the introduction of carbon targets in many jurisdictions has changed rail's value proposition in the minds of users and tax payers.

People are also increasingly starting to recognize that more roads do not necessarily

> Flush with new investment and driven by growing public demand, the rail sector has – rather suddenly – surged back into the hearts and minds of politicians, investors and average citizens.

lead to more growth or better quality of life. In fact, many governments are now starting to eschew the 'car culture' that has built up in most urban areas and, in response, are placing growing investment and support behind mass transit in general and rail in particular.

The resurgence of rail is also driving a renewal of innovation across the sector. New control systems, greater data analytics capabilities and improved use of technology are all creating new opportunities for improved productivity and efficiency while, at the same time, innovative operating models are being developed, supported by a burgeoning international rail operator segment.

MORE THAN THE SUM OF THEIR PARTS

While these macro trends are certainly important, the reality is that rail's resurgence has more to do with the perception and understanding of rail than with any specific technological advances. Simply put, politicians, investors and voters understand that improved rail service does more than just move people or goods from point A to point B; it creates value. Value for users, value for investors, value for businesses and value for governments (and their tax collectors).

As a result, we are starting to see rail projects evaluated on more than just financial and environmental feasibility. South Africa's rail modernization program, for example, is designed to not only raise the quality and productivity of the country's rail network, but also to drive local development, create jobs and – ultimately – establish a 'made-in-Africa' rolling stock manufacturing sector. São Paulo's rail investments are largely focused on improving access to employment for a broader cross-section of society. Proponents of the UK's HS2 project are adamant that the project will be 'transformational' for the UK economy.

NEW SOURCES OF FUNDING EMERGE

With the reevaluation of rail's value has come a transformation of its funding. As the article on page 66 clearly demonstrates, government leaders and rail authorities are now exploring new and alternative approaches to funding and financing transit, often by monetizing the development opportunities that so often surround rail development.

In much the same way, the roundtable article on High Speed Rail (page 58) shows that – while government will often still need to take on some of the risk of development – many are starting to think more creatively about how major projects are funded and financed.

THE STORY BEHIND THE STORIES

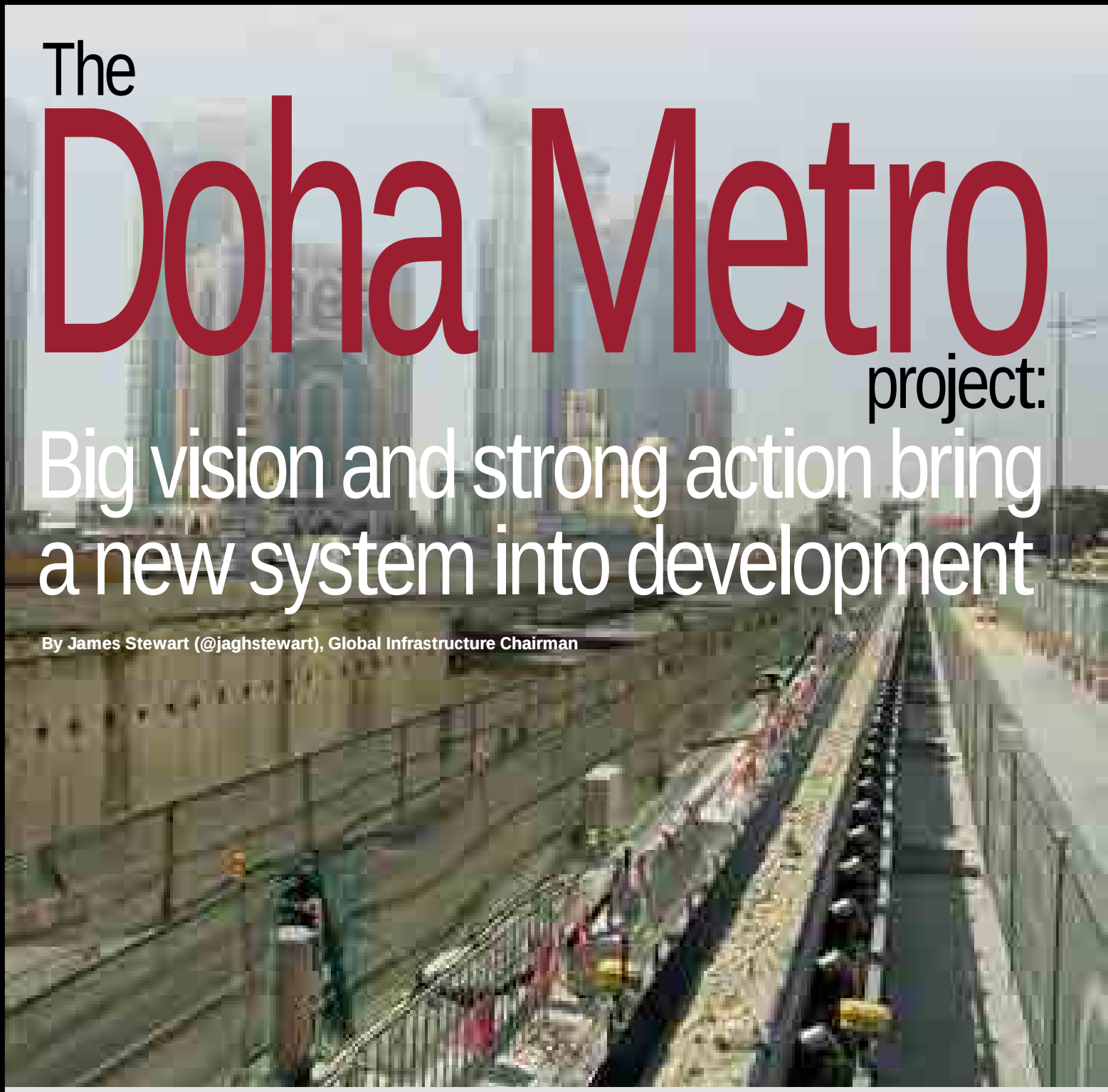
Ultimately, this *Special Report on Rail* highlights a number of key lessons for governments, rail operators and developers around the world. Likely the most important theme is that of connectivity. Those that take the time to fully understand how their assets 'fit' into the wider economy should be better placed to reap the broader benefits.

The need for improved stakeholder management also emerges from these articles. Organizations that collaborate and consult with stakeholders – from development partners through to community advocates – will face fewer challenges and achieve greater results from their investments.

A more subtle – but equally important – theme is that of operational efficiency. Building new lines is great, but getting more from your existing assets is better. Given the significant advances in technology, control systems and operational capabilities, organizations should be continuously striving to improve the efficiency and productivity of their assets.

All of this leads to one over-arching conclusion: those that take a more holistic view of their rail projects and investments will likely achieve more value, better returns and deliver better quality services from this resurgence of rail than those that view their projects from a purely technical or financial perspective.

The Doha Metro project: Big vision and strong action bring a new system into development



By James Stewart (@jaghstewart), Global Infrastructure Chairman

Few nations have enjoyed the growth seen by Qatar over the past 50 years. In 1970, Qatar was a nation of just over 100,000 people with a Gross Domestic Product (GDP) (on a purchasing power parity basis) of only US$300 million.[1] Today, the nation boasts more than 1.8 million people and a GDP of almost US$300 billion.[2] And according to the IMF, Qataris enjoy the highest GDP per capita in the world – almost 50 percent higher than that of Luxembourg.[3]

While oil revenues clearly played a significant role in Qatar's spectacular growth trajectory, the government is increasingly focused on catalyzing greater diversity within the economy. One of the key ways they hope to facilitate this shift is through improved urban transport.

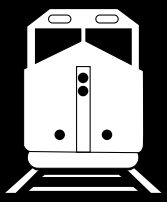
A CLEAR VISION

As the Managing Director of Qatar Rail, Mr. Abdulla Abdulaziz Al Subaie, points out, "Transport and mobility are important for any city, but it becomes even more critical for rapidly growing cities where demand is increasing exponentially each year. Today, everyone relies on private cars and congestion is becoming unsustainable; some estimates suggest that congestion costs our economy between 1 to 2 percent of GDP each year." The need for improved transit will become even more acute as Qatar gears up to host the 2022 FIFA World Cup.

Guided by the Qatar National Vision 2030 – a clearly articulated strategy for driving economic and social progress for the nation – the government's transportation plans include massive development over the next few years through three interconnected projects – the Doha Metro, the Lusail Light Rail Transit project and the Long Distance

1 http://www.tradingeconomics.com/qatar/gdp
2 "Report for Selected Country Groups and Subjects (PPP valuation of country GDP)" IMF, 2015
3 World Economic Outlook Database, April 2015

SPOTLIGHT



> Transport and mobility are important for any city, but it becomes even more critical for rapidly growing cities where demand is increasing exponentially each year.
>
> **Mr. Abdulla Abdulaziz Al Subaie**, Managing Director, Qatar Rail

rail project. "Our National Vision is a very strategic program that aims to transform Qatar into a better place to live and work and we believe that superior transportation infrastructure is key to unlocking that vision," added Mr. Abdulla.

THINKING BIG AND ACTING BIG

Much like its endeavors in other areas, Qatar's plans for the development of the massive Doha metro system are both grand and ambitious. The first phase will see more than 100 kilometers of track laid and more than 37 new stations built over the next 4 years (by 2019). A second phase will add 72 more stations, extending the network by an additional 150 kilometers. "This will be one of the most advanced metro systems both in the region and in the world," noted Mr. Abdulla.

And, much like its achievements in other areas, Qatar seems to be on track to meet its aggressive goals. The last of the 11 construction packages was awarded in February 2015 and, as of April 2015, more than 7 million cubic meters of soil had already been moved and more than 52 million man hours had already been invested in the project. The government's commitment to meet their deadlines is perhaps best illustrated by the fact that Qatar has acquired 21 tunnel boring machines which are now all engaged simultaneously on the project.

THE RIGHT PARTNERSHIPS, EXPERIENCE AND CAPABILITIES TO SUCCEED

Qatar's government also recognized, however, that it takes more than funding to successfully deliver a project of this size and complexity. "Qatar Rail adheres to very high governance and transparency practices which delivers greater accountability in terms of project management and delivery. We know that our success will ultimately depend on our ability to manage the complexity, so we focus on integrating multiple perspectives to help us predict and mitigate risk," noted Mr. Abdulla.

With no existing rail infrastructure or developers active in the market prior to this project, the Doha Metro project required significant international participation. "The challenge was that – while the international contractors were excellent at building rail networks they lacked knowledge of local laws and regulations and that could pose a risk to the project. To overcome this, we asked international contractors to bid through Joint Ventures with local companies who could help them navigate local market issues, laws and regulations," added Mr. Abdulla.

ACHIEVING THE VISION

Enhancing the social and economic value of the project has also been a key priority for the project planners and owners. Stations, for example, are planned to be part of 'mixed use' communities where commercial centers are developed over top of the urban stations. "We believe that our stations should add to the appeal of an area and – in doing so – increase the population density around the station which, in turn, will drive increased use of the network," stated Mr. Abdulla.

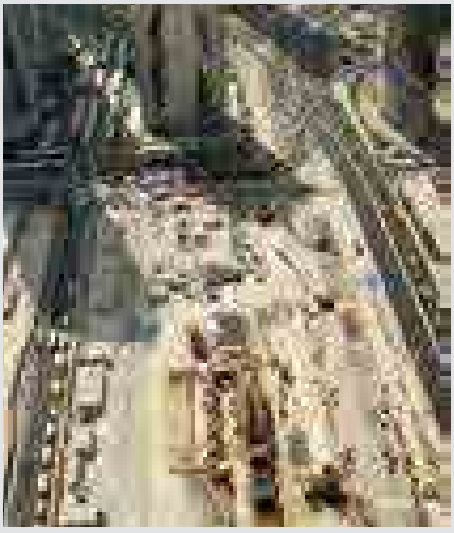
Sustainability is also a key theme for the project. "Economic, social and environmental sustainability are central to achieving our objectives for social and economic progress. This project, once completed, will cut more than 250,000 tons of CO_2 from the environment each year, will improve overall road safety and will allow our younger generations to enjoy more freedom of movement and opportunity," noted Mr. Abdulla.

PROACTIVELY MOVING INTO THE FUTURE

Qatar Rail knows that there will be challenges along the way. Mr. Abdulla notes the need to be ready for the unexpected and to know how to deal with issues creatively through collaborative relationships and partnerships.

Ultimately, Mr. Abdulla points to the need for both effective engagement with government authorities and key stakeholders and an ability to be proactive as keys to success. "We have been very proactive in finding all of the skills and deploying all of the expertise required to deliver this size of project on time and on budget," added Mr. Abdulla.

"Creating a metro system from scratch is unlike any other project – it's not a one-time deal nor is it ever developed in isolation – so it's critical that we continue to be proactive as our nation grows and changes. We want this metro system to serve the city well for 100 years or more."



Roundtable Q&A: Securing the vision of High Speed Rail

> The bigger challenge is making sure that what you build fits into the cities, communities and the infrastructure of the future, and that is all about working with communities, stakeholders and government partners to ensure that everyone has an integrated masterplan.
>
> **Simon Kirby,** CEO, UK's High Speed Two Limited

High Speed Rail projects are capturing the imagination and the attention of governments and populations across the globe. Today, dozens of networks are being developed around the world, from the Middle East and Asia through to the US and the UK.

To find out more about the opportunities, benefits and challenges of developing a High Speed Rail network, Insight Magazine *sat down with* ***Simon Kirby****, Chief Executive Officer of the UK's High Speed Two (HS2) Limited and* ***Jeff Morales****, Chief Executive Officer of the California High-Speed Rail Authority.*

Editor (ED): What is it about High Speed Rail that makes it so attractive today?

Simon Kirby (SK): I think, in a word, it's transformational. It's a complete step-change in the capability and capacity of rail. But it's more than just building a new world-class railway; in the UK we see it as an opportunity to stimulate economic growth. Our current rail network capacity is already maxed out and we believe that High Speed Rail will allow us to not only improve access across the country, but also lighten the load on our current rail and road networks.

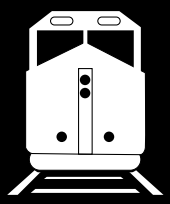
Ultimately, I believe it isn't just about what we build and what we deliver. It's about how we build it and how we maximize the potential benefits from an economic, a social and an employment perspective.

Jeff Morales (JM): That's right. In fact, I would suggest that it's not about the train at all. High Speed Rail is really about things like creating a positive impact on communities, investing in sustainable development, reducing greenhouse gasses, and encouraging a mode-shift away from roads and onto trains. It's about economic development and the benefits of tying together regional economies in a way that hasn't been done before. The train is really just a means to an end.

ED: What are some of the challenges organizations face when developing a new High Speed Rail network?

JM: For us, I think one of the greatest challenges we face is that High Speed Rail is new to the US. We're the first. The problem is that few people in the US – from the average citizen through to elected officials – have any first-hand experience with High Speed Rail and so they have a hard time really grasping the concept. They understand roads and highways; they understand airports and transit systems; but they don't really understand the value and benefits that High Speed Rail has to offer.

> Thinking practically, I believe that High Speed Rail will become an ever-more important part of the transportation mix for many countries. It's not a pet project or a whim; for us in California, it's a necessity.
>
> **Jeff Morales,** CEO, California High-Speed Rail Authority



That being said, I suspect that – as we progress in California – more High Speed Rail projects will be proposed and developed across the country.

SK: The greatest challenge facing the UK is similar in nature to that facing the US: experience with High Speed Rail. In the UK, it's less of a public perception challenge – High Speed Rail has a lengthy history across Europe – and more of a challenge in securing the right skills and capabilities to manage and operate the project.

High Speed Rail is very different to traditional rail. The technology is different, the solutions are different and the skills required are different. That's why HS2 Limited is now building two new colleges in the UK to focus solely on developing the skills required for High Speed Rail.

ED: High Speed Rail projects often take decades to develop and deliver and – if all goes well – should last another 75 to 100 years or more. How are you ensuring that investments today will meet the needs of future generations?

SK: It is certainly difficult. Ultimately we are building a significant piece of infrastructure, so the challenge is how to get innovation into our design and innovation into our thinking. How can we really forecast what will constitute an outstanding experience for a passenger in 2026? It's almost like asking what the iPhone18 will look like in 20 years.

But the bigger challenge is making sure that what you build fits into the cities, communities and the infrastructure of the future, and that is all about working with communities, stakeholders and government partners to ensure that everyone has an integrated master plan.

JM: I'd agree that it's difficult to forecast what customers will want in the future and so we rely heavily on the manufacturers and rolling stock providers to drive innovation. Our legislation sets certain guidelines like minimum speeds and safety standards, but then we really look to the private sector to help us take advantage of – and, later, adapt to – new technologies.

Much like the UK, we're also very focused on working with the local communities and governments to ensure that our network is efficiently and effectively integrated into their master plans and transit strategies. I think there were initial doubts that the project would get going but, now that it has, we have seen increasing engagement from local communities and stakeholders.

ED: What role does politics play in driving High Speed Rail projects through the pipeline?

JM: I think politics can be divisive but political leadership is key, and that is true of any big venture. Projects that are this big and this transformational really need a vocal champion that can articulate and maintain a vision of what the project means and that is what Governor Jerry Brown has done here in California.

At the Federal level, politics is playing a more divisive role that has led to a period of decline in infrastructure investment. It can take years just to have a simple highway bill reauthorized at the Federal level so we need to show a much more positive direction and make big, bold investments at the State level instead.

SK: It is absolutely about political leadership and support. And in the UK, we've been lucky to enjoy broad support for HS2 from both of the main political parties. In fact, both parties voiced their support for HS2 as part of their recent election platforms and – at the second reading of the bill in the House of Commons last year – Members of Parliment voted to support the project by a majority of 411.

But like any large, transformative and potentially sensitive project, we need to continuously build and maintain that political support by delivering on our promises and doing it to a high standard.

ED: Securing sufficient funding and financing has been an ongoing challenge for High Speed Rail projects around the world. What role can the private sector play in helping fund these projects?

SK: Current government policy is that the first phase of HS2's infrastructure will be funded by the government treasury so ultimately it will fall on the public balance sheet. To be honest, I think it's getting harder and harder for government to pass on these types of major projects.

But I think the broader issue is how you work with local stakeholders and private interests to enable a blend of public and private funding that focuses on stimulating economic growth. For example, we see great opportunities to stimulate significant private funding for developments around major stations. The ultimate objective is to drive private funding off the back of the publicly-funded station in a way that creates a huge scale of development and economic benefit.

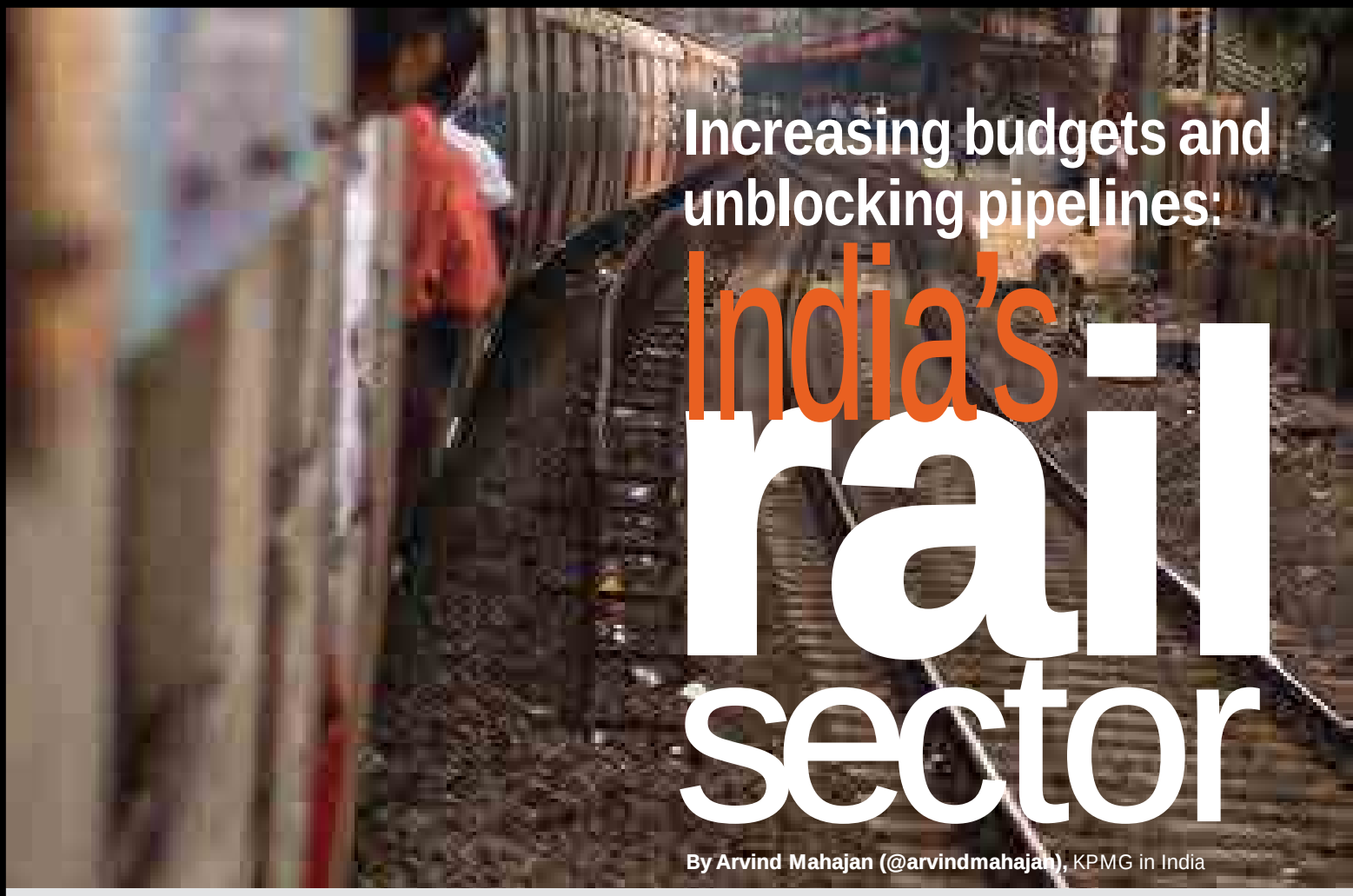
JM: We're also deeply focused on exploring how we can generate new sources of funding from the project. Nearly a third of the revenues of JR East – one of Japan's leading High Speed Rail owners and operators – now comes from things other than ticket receipts and that suggests that significant private funding can be secured for these types of projects.

In California, our project was identified as a critical part of the State's program to address climate change back in 2008 and, recently, the legislature under Governor Brown agreed to commit 25 percent of the annual proceeds of the State's Cap and Trade program towards the High Speed Rail program and that has been a game-changer. It not only provides us with both cash and financing options, but also means we'll be able to deliver the project faster, more efficiently and with greater environmental benefits.

ED: Do you see a strong future for High Speed Rail going forward?

JM: I think that High Speed Rail fills a specific niche in the overall transportation system very efficiently in terms of environmental impact, land use, capacity and speed. And it does all of that in a way that highways, airplanes and traditional rail simply can't. So thinking practically, I believe that High Speed Rail will become an ever-more important part of the transportation mix for many countries. It's not a pet project or a whim; for us in California, it's a necessity.

SK: I absolutely agree. And that's what makes it such an exciting time to be involved in the sector. The opportunities in terms of job creation, skill developments, economic growth and innovation are unprecedented – a once in a lifetime opportunity – so it's a hugely positive place to be, not just today but for the next two to three decades at least.



Increasing budgets and unblocking pipelines: India's rail sector

By Arvind Mahajan (@arvindmahajan), KPMG in India

With the tabling of India's 2015 Rail Budget in February, Railway Minister Suresh Prabhu clearly signaled India's intention to unblock the infrastructure project pipeline. The capital outlay for 2015-16 is around INR 1 trillion (US$15.6 billion), which is around 55 percent higher than last year's outlay.

The 2015 Rail Budget represents a significant increase in allocation towards rail infrastructure for India. Almost half will come from the public budget and Minister Prabhu hopes to secure the remaining funds from private investors including pension funds, multinational banks, infrastructure funds, and by borrowing from the market. According to Minister Prabhu, private sector investment and tapping alternative mechanisms of financing will be two key factors in achieving his Ministry's goals under this latest budget.

We sat down with Minister Prabhu shortly after he announced the 2015 budget to find out more about how his new investment strategy will drive value for private investors, the Indian economy and the wider national population.

Arvind Mahajan (AM): What is driving the renewed investment into India's rail sector?

Minister Suresh Prabhu (MP): The Prime Minister and his government are very focused on creating a more prosperous India and recognize that our railways are an important enabler of that vision. In part, it's about improving our growth, productivity and attractiveness as an investment destination.

But there's also an ideological link that reflects the important role railways play in creating opportunities for the common man. A nationally linked rail network also brings together and bonds all of the States across India which is important to driving more consistent growth across the country. The government is going to bring in a major reform in the form of Goods and Service Tax (GST) implementation and when this happens the entire country will become one unified market. However one unified market needs physical connectivity and railways will play a critical role in this.

AM: In your recent budget, you articulated a vision for India's railways. What are the key priorities for your Ministry?

MP: One of our top priorities is making sure we embed good global customer service standards into our rail network and operations. At the same time, we need to focus on safety and are already working with the Ministry of Transportation to raise safety standards.

Proposed investment plan (2015-2019)

Item	Amount (Rs in crore)
Network Decongestion (including DFC, electrification, doubling (electrification and traffic facilities))	199,320
Network Expansion (including electrification)	193,000
National Projects (North Eastern & Kashmir connectivity projects)	39,000
Safety (track renewal, bridge works, ROB, RUB, signalling & telecom)	127,000
Information Technology/Research	5,000
Rolling Stock (locomotives, coaches, wagons – production & maintenance)	102,000
Passenger Amenities	12,500
High Speed Rail & Elevated Corridor	65,000
Station Redevelopment & Logistic Parks	100,000
Total	**856,020**

Source: Indian Railways, 2015

SPOTLIGHT

> Since railways are a monopoly, we will need the right regulatory framework to ensure that we are striking the right balance between the needs of private investors and the interests of the public and the economy.

Suresh Prabhu, Railway Minister of India

We carry 1 billion tonnes now and our target is to achieve 1.5 billion tonnes in 5 years. We are well on our away to exceeding this target. My top priorities are capacity augmentation, modernization, accounting reforms and making the railways bigger and better.

AM: What are some of the challenges you see in attracting private investment?
MP: Since railways are a monopoly, we will need the right regulatory framework to ensure that we are striking the right balance between the needs of private investors and the interests of the public and the economy. A model concession agreement has been prepared and put up on the website of the Indian Railways. We are also revamping the public-private partnership (PPP) cell at the Railway Board.

AM: What opportunities are there for private investors in India's rail sector?
MP: I see private sector participation as a win-win for everyone. The private sector can look at various opportunities available in the areas of last mile connectivity to ports, tourism, etc. There are opportunities in station redevelopment and also in various railway line projects that Indian Railways plans to do on Annuity/BOT basis. Other PPP policies such as the Special Freight Operators Policy and Liberalized Wagon Investment Scheme are under review and once ready will also present an investment opportunity for the private sector. A list of projects in which Indian Railways wants to invite private sector participation has been posted to the Railways website.

AM: What role do you see foreign development banks, multinational banks and foreign governments playing in the funding of India's railways?
MP: We already have agreements with about nine critical country partners and are actively pursuing others. Foreign investors can participate in a number of ways – often through either investment or technological partnerships. Japanese entities are keen to participate in the Mumbai Ahmedabad High Speed Rail project. Chinese investors are looking into the Delhi-Chennai high speed corridor. Investors from France, Germany, Italy, Korea and a host of other countries are also interested in participating in India's rail sector.

AM: The budget contains a number of topics and projects that have been raised before but never materialized. Are you confident in your Ministry's ability to deliver on these targets?
MP: I'm happy to report that within a week of releasing the budget, we were already implementing a large number of the projects outlined in it. We've also made great strides in ensuring our public sector managers have the right policies in place to support faster decision-making. I'm very confident that we will meet our budget targets.

Four transformative goals

According to India's Rail Ministry, the government hopes to achieve four transformative goals over the next 5 years:

1. To deliver a sustained and measurable improvement in customer experience.
2. To make rail a safer means of travel.
3. To substantially expand Bhartiya Rail's capacity and modernize infrastructure: increase daily passenger carrying capacity from 21 million to 30 million; increase track length by 20 percent (from 114,000 to 138,000 kilometers); grow annual freight carrying capacity (from 1 to 1.5 billion tonnes).
4. To make Bhartiya Rail financially self-sustainable and generate large surpluses from operations, not only to service the debt needed to fund capacity expansion but also to fund the ongoing replacement of depreciating assets.

Source: indianrailways.gov.in, Highlights of the Railway Budget 2015-2016

ADDRESSING THE RIGHT PROBLEM

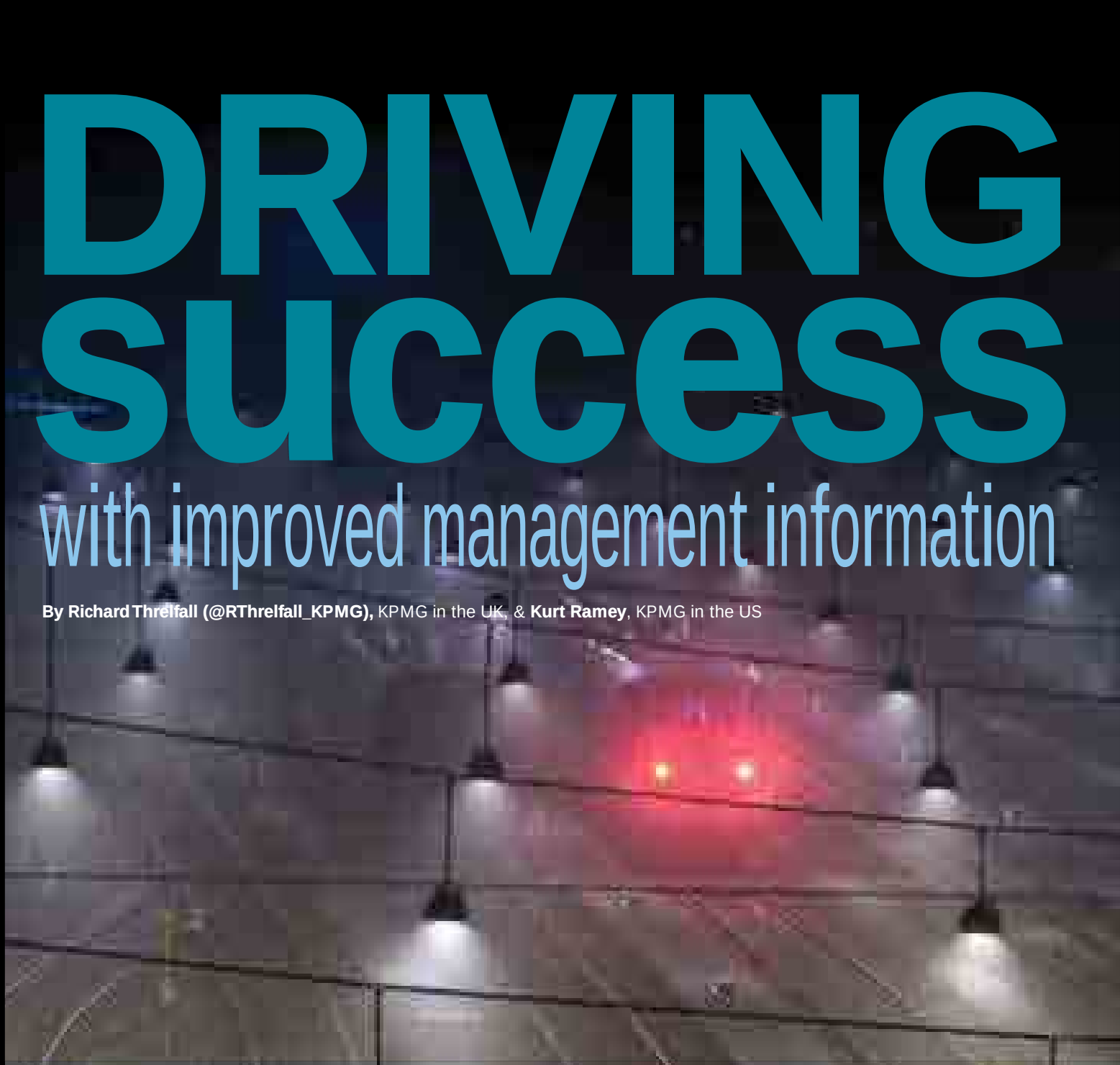
By Rajaji Meshram (@RajajiMeshram), KPMG in India

The statistics linked to the railways in India are impressive, by any standards – 65,808 route kilometers, 7,112 stations, 1 billion tonnes of freight traffic and 8.4 billion originating passengers (all figures are for the year 2013-14). Another interesting statistic, as per a report of the Planning Commission of India, is that the modal share of railways in passenger traffic is around 10 percent and in freight traffic is around 35 percent. The modal share of railways, in the beginning of the 21st century was 15 percent and 40 percent respectively. The share of railways has thus been steadily declining. One important reason for this has been under investment in railway infrastructure. Railways, in India, is a sector where there is negligible private sector investment (around 6 percent) as compared to roads (20 percent) or ports (81 percent) sectors. Key railway lines in India which carry a major proportion of passenger and freight traffic are choked and there is an urgent need for investment to augment the line capacity. By focusing on the aspect of routing additional funds to the railways sector, the Minister is trying to address one of the root causes impeding growth in the railways sector. Private sector investments in the road, port and airport sectors in the past decade have led to significant addition in capacity and the Minister wishes to replicate this in the railways sector. In our view, the Minister is taking appropriate steps to address the right problem of under investment in railways sector. Once the funding for the railway sector is ramped up, the next challenge for the Ministry would be to create an execution organization that has the capability to spend the funds allocated and deliver projects on time.

DRIVING success

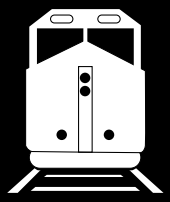
with improved management information

By Richard Threlfall (@RThrelfall_KPMG), KPMG in the UK, & **Kurt Ramey**, KPMG in the US



The pressure on public and private railway owners and operators is tremendous: public scrutiny is mounting; demand for service is rising; and the available time for maintenance is becoming increasingly scarce. At the same time, rail owners and operators each face a unique combination of (sometimes conflicting) local stakeholder pressures and demands.

In this increasingly complicated environment, robust governance structures underpinned by good management information are essential to long-term success. Yet historically rail owners have struggled to obtain good information on their assets, and rail operators are routinely overwhelmed with conflicting information when things go wrong. Both challenges are now being solved, through the adoption of technology in the industry and through transformational improvements in data analytics.



> With complexity rising on all sides, many railway operators and owners are now exploring how they might alleviate some of these pressures by improving their governance structures and management information.

RISING PRESSURE, MOUNTING COMPLEXITY

Few users of rail services truly understand the astounding complexity that goes into making sure that projects are delivered and that trains run on time. Yet there is an expectation, amongst rail customers, and the general public, that a rail system should run like clockwork, and when there are safety or operational problems and delays railway owners and operators quickly find themselves subject to intense and often public criticism.

That rising public scrutiny in turn drives increased political scrutiny. It is not unusual to see the CEO of a metro service dragged in front of a legislative commission to answer for service interruptions or safety failures. And there are countless examples of rail projects that have died or stalled as a result of policy or administration changes.

At the same time, demand for service is rising while funding remains limited and assets are coming under increasing pressure as owners and operators seek to squeeze more value and efficiency from their existing investments. For operational railways, this means less 'down time' for maintenance and upgrades. For those under development or in design, this means renewed focus on reducing (or delaying) costs and eliminating over-runs or delays all while building in needed operational and safety requirements.

THE NEED FOR ROBUST GOVERNANCE

With complexity rising on all sides, many railway operators and owners are now exploring how they might alleviate some of these pressures by improving their governance structures and management information. And rightfully so: robust governance and management information are key to long-term operational success and financial stability.

In part, this is because robust governance structures allow operators and owners to properly delineate responsibility and allocate risk. Clear and coordinated governance structures are critical to ensuring that all parties understand their responsibilities and that there are clear reporting processes, which become particularly critical at times of network disruption or when external events impact project delivery.

A strong governance structure is also central to managing public perception and responding to stakeholder and policy questions. Indeed, by clearly articulating a plan and communicating with stakeholders, railway owners and operators can help build up public consensus around their objectives and the necessary actions to achieve them. And in doing so, they can also quickly respond to issues and policy questions.

TECHNOLOGY TO THE RESCUE

Whilst the need for good governance has always been understood, it has been difficult to attain in practice in the railway sector. The operating environment is inherently complex, and railway owners typically lack good information on assets which may have been created decades previously. This severely limits the ability to closely manage asset performance. Fortunately, technological developments, both in physical assets and in data analytics, now provide a basis for a step change in information quality.

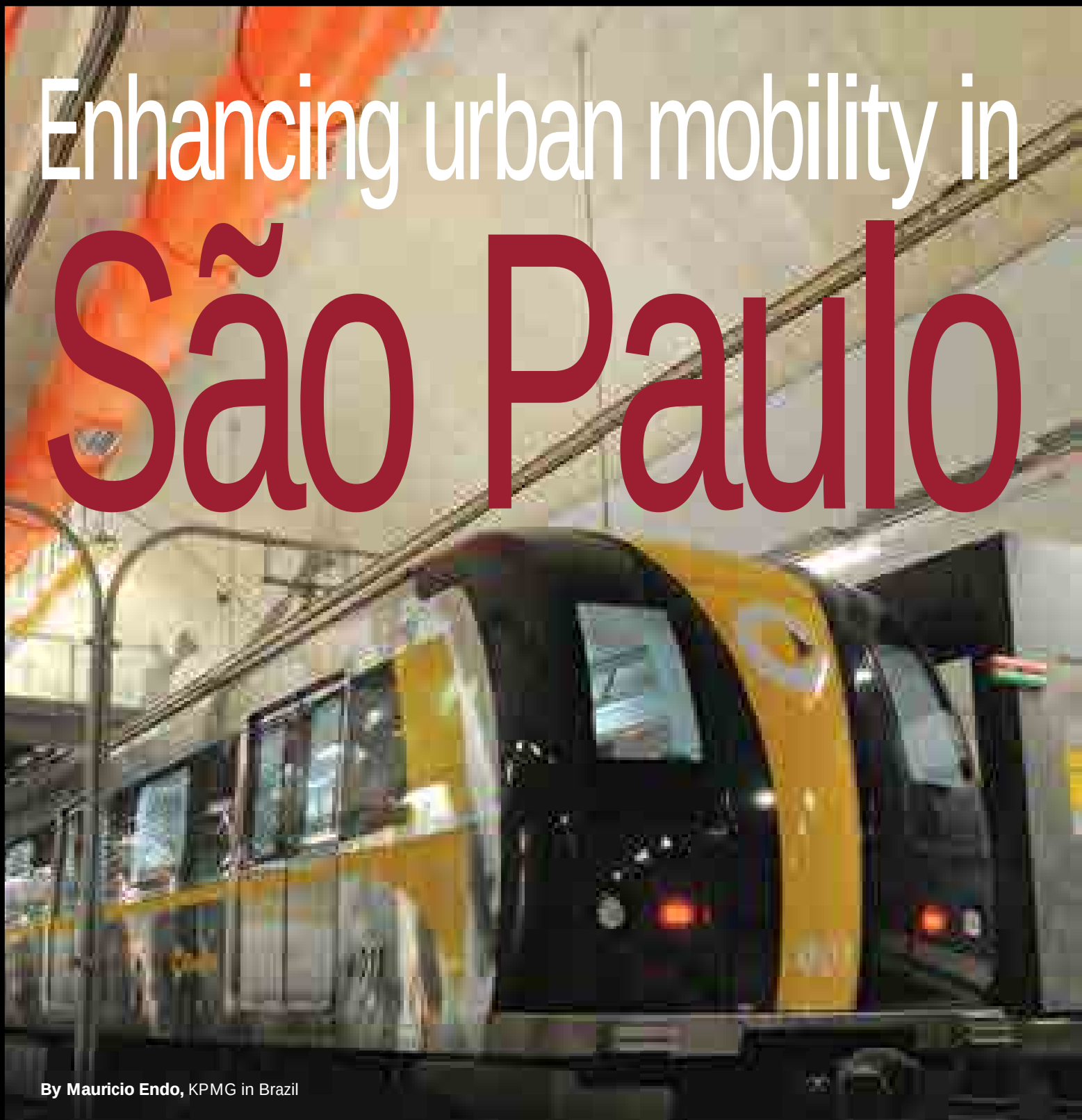
From a railway operator perspective, implementation of performance management structures supported by technology offers both improvements in customer experience, improved information and can extend to safety and asset life. For example, the paper ticket is rapidly becoming obsolete in favour of smart cards or contactless payment. That is easier for customers but it also provides a wealth of information for operators on journey choices. Combined with mobile data, suitably anonymised to deal with personal data privacy, rail operators can start to track end-to-end journeys, and then run predictive data analytics to forecast, for example, how volumes may be affected on a particular route by wet weather or a major event. That in turn allows mitigating actions to be taken, for example increased staffing or additional services to be run, if overcrowding is expected. And rapid data diagnostics allow better decisions to be taken when services are disrupted, quickly computing what pattern or diversion or replacement services will minimize customer inconvenience.

For the railway owner, technology is making the asset management revolution possible. Building Information Modelling holds out the promise of asset information for life. Mapping technology means increasingly we know where our assets are, both for a particular network and relative to other networks. Embedded technology in assets means a constant stream of data on asset health. Data analytics creates the capacity to take all of that data, model future scenarios, and for decisions on interventions to be based not just on judgement but on an understanding of long-run financial and operational outcomes. For asset intensive rail businesses it is the route to maximizing long-term profitability and performance. For public sector railways it is the key to unlocking value. It should mean greater transparency and accountability for both shareholders and taxpayers.

CONCLUSION

The technical challenges of running a railway have not changed materially in decades, but the intensity of use of many railways has multiplied the difficulty of meeting that challenge. Railway owners and operators need to invest now in the structures and technologies that both improve the customer experience and provide a basis for more effective decision making.

Enhancing urban mobility in São Paulo



By Mauricio Endo, KPMG in Brazil

Boasting the largest population in Latin America – arguably the largest in the Western Hemisphere – urban mobility is a critical issue for the São Paulo Metropolitan Region. The 'megacity' already enjoys one of Latin America's largest rail systems which, as part of the wider integrated mass transit system in the region, carries more than 7 million people around the city each day across both the Metro and the regional commuter rail company CPTM.

Yet while the rate of population growth in the megacity may be slowing, Clodoaldo Pelissioni, Secretary of Metropolitan Transportation for the State of São Paulo notes that the region's future economic, social and development goals largely rely on improving connectivity and mass transit in the region.

BIG CITY, BIG CONGESTION

With more than 20 million people spread across more than 8,000 square kilometers, urban transit is a key topic for those living and working in the São Paulo Metropolitan Region (RMSP). Roads have become congested; over the past 8 years, automobile usage has increased 18 percent in the city, while the population itself has grown by just 2 percent.

According to Mr. Pelissioni, increasing automobile usage has started to strain the city's roads and economic productivity. "The high number of trips made by automobiles has created heavy traffic jams during 'peak hours' which, besides being of great environmental and economic concern, also means increasing time spent travelling between home and work for the region's population," he noted.

RMSP already boasts a world-class transit system. The city's metro was named Best Metro Americas in 2010[1] and the São Paulo Metropolitan Train Company (the region's

1 http://www.abn.com.br/editorias1.php?id=58485

> Many of our plans focus on the growing need to provide service to areas where the projection of socio-economic variables point to a higher incidence of low-income population.
>
> **Clodoaldo Pelissioni,**
> Secretary of Metropolitan Transportation for the State of São Paulo

commuter rail service) is one of the busiest rail networks in the world. The network also includes a massive bus system (more than 16,000 buses) and an extensive network of rapid bus transit lanes.

IMPROVING CONNECTIVITY AND ADDRESSING SOCIAL IMBALANCES

"A big challenge in the past was the historic lack of connectivity between modes of transport which impacted accessibility to urban centers of jobs and services," added Mr. Pelissioni. "The big challenge we are facing is to update the metropolitan network of high- and medium-capacity transport in RMSP."

Another key challenge now facing the city is the perceived imbalance between the distribution of low-income housing and the employment centers. "The São Paulo State Secretariat for Metropolitan Transports (STM) has tried to link our solutions to the objectives of other key public policies, particularly around land use and development," added Mr. Pelissioni. "Many of our plans focus on the growing need to provide service to areas where the projection of socio-economic variables point to a higher incidence of low-income population."

PRIVATE SECTOR INVOLVEMENT HELPS EXPAND THE NETWORK

A set of long-term investment plans for the city's urban network envisions massive expansion over the next 15 years. The length of the network will triple from the current 500 kilometers of high- and medium-capacity to more than 1,500 kilometers by 2030; the number of stations serving the lines will also nearly triple to more than 420. The metro system will see the greatest level of expansion, alongside some 200 kilometers of proposed monorail.

Such a large and diverse number of projects in development and planning is creating significant challenges for the SMT. "It's a massive undertaking, requiring a high level of financial resources, strong management capability and extensive capacity in terms of works, equipment and services," noted Mr. Pelissioni. "Recognizing this, the government is now encouraging the participation of the private sector through public-private partnership (PPP), particularly in the rail sector."

The first PPP ever conducted in Brazil was for the São Paulo Metro (Line 4) in 2005, signed just a few short months after the passing of new federal PPP legislation in December 2004. In the last 2 years alone, two new PPP arrangements have been signed – one for the Metro's new Line 6 and one for the Monorail Line 18.

The ability to finance these works has been supported by Brazil's National Development Bank (BNDES) who have not only financed the State payments during the works through subsidized interest rates, but also the private Special Purpose Company. "One big benefit of working with the BNDES is that it essentially meant that the grantor did not need to offer real guarantees to private PPP partners for the public obligations which, in turn, has allowed the State to contract several other PPP projects in the following years," Mr. Pelissioni added.

MORE WORK TO BE DONE

While progress is certainly being made, Mr. Pelissioni suggests that the country could be doing more to attract private investment to urban mobility projects. "One area of focus should be on establishing the legal conditions and instruments for the expansion of public guarantees to private partners which will reduce credit risk and consequently reduce the cost of long-term loans," he added. "It will also be essential to improve regulations and reduce bureaucracy, as well as to establish the right macroeconomic conditions and mechanisms for the expansion of private resources for long-term financing, complementing or replacing those offered by BNDES."

However, he also notes that greater inclusion of the private sector in infrastructure delivery does not absolve the public sector from their strategic planning duties and responsibilities. "There really needs to be someone focused on understanding the studies within the broader context of planning which includes issues such as demand management measures, pricing policies, the identification of new and complementary sources of financing, and the consolidation of an integrated planning management and monitoring process," Mr. Pelissioni added.

To achieve this, however, Mr. Pelissioni calls for greater collaboration and cooperation between the public and private sectors. "For us to continue our advances, it is essential that the dialogue established between the main actors involved in the operation and management of the metropolitan transportation systems, including the municipal systems of the RMSP, remains strong and ongoing," he noted.

Ultimately, solving São Paulo's urban congestion challenges will require all levels of government to work towards a solution. "The problem of transportation will not be settled solely by one sectorial policy created in a vacuum; it can only be achieved if there is appropriate interaction of various urban functions, governed by the corresponding public policies and invigorated by market forces."

Alternative funding and financing of rail projects

By Ian Flanagan, KPMG in the US, & **Philippe Raymond,** KPMG in Canada

These days, it seems everyone wants more rail projects. But few know how to pay for it. Budget constrained and feeling pressure from mounting unfunded needs, many jurisdictions are now starting to consider alternative ways to fund and finance their much-needed rail projects.

A DESPERATE NEED FOR FUNDING

When we talk with government leaders about infrastructure, rail and transit projects almost always top the list of priorities. Whether it is new metro lines in Mumbai, High Speed Rail in the UK or regional lines in East Africa, governments are increasingly recognizing that improved connectivity can help drive growth and environmental benefits, promote economic inclusion and enhance productivity.

But there is a big difference between wanting better rail projects and being able to afford better rail projects. And few governments today are in a position to lavish out on new major capital projects. In most markets, government budgets are as tight as they have ever been. Difficult funding choices are being made and credit agencies are watching every penny that is added to the balance sheet.

Over the past decade, many governments sought some reprieve to their funding woes by making use of more efficient project delivery mechanisms that can generate cost savings, such as entering into public-private partnership (PPP) agreements or through concessions. In addition, governments today are keenly searching for alternative options for creating new, long-term, sustainable funding for their rail projects. Some are already achieving significant success.

A NEW VIEW OF VALUE

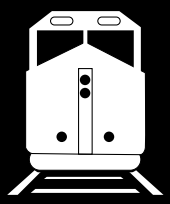
A review of the current alternative funding models around the world suggests that the key to uncovering new funding options is to rethink the 'value' that rail and transit projects provide to stakeholders.

In the past, most governments tended to focus on the value rail projects offered to direct stakeholders, such as transit users and advertisers. Often left out of the equation was the more long-term value that rail projects were known to deliver to their surrounding areas. So while government would pay for new rail lines and stations, it was often the property developers, businesses and homeowners that captured the long-term value from government's capital expenditure.

ALTERNATIVE MODELS EMERGE

Today, governments and project owners are increasingly starting to think about how they might tap into that long-term value lift to create alternative – and often more sustainable – funding options for rail projects. A number of different models have emerged or have generated renewed interest, such as:

- *Tax Increment Financing (TIF):* This approach essentially uses expected property tax gains that will be derived from the capital expenditure to help fund the necessary rail development, often by allowing government to borrow or issue bonds against the anticipated incremental tax revenues. TIF approaches have been used successfully, mainly in the US. However, while TIF approaches tend to be useful in unlocking new funding flows, it must be noted that governments will often still need to take on much of the revenue risk.
- *Joint Development:* In a Joint Development, public and private sectors work together to develop rail assets through a prudent quid-pro-quo. In some cases, for example, the public owner will lease or sell lands adjacent to the project in return for



> A review of the current alternative funding models around the world suggests that the key to uncovering new funding options is to rethink the 'value' that rail and transit projects provide to stakeholders.

contributions to its development (as was the case for some Metrorail stations in Washington D.C.). Alternatively, the developer may be expected to contribute a portion of their annual revenues or rents towards the ongoing funding of the project.

- *Local Improvement Districts:* While Local Improvement Districts operate more as a special property tax levied on those within the district boundary, the idea is to capture some of the property gains that will be delivered through rail improvements and capital investments (within a defined distance from rail stations). Governments may issue a bond against the future tax revenues or use the annual payments to maintain and upgrade assets on an ongoing basis.
- *Cap and Trade:* While there are a number of 'Cap and Trade' programs underway around the world, the State of California stands out for specifically earmarking a portion of the revenues gained from their program (aimed at reducing carbon emissions overall) towards helping fund a low emission form of transportation – High Speed Rail. In doing so, the State has essentially developed a new source of ongoing funding that helps it better achieve its environmental goals by funding a High Speed Rail project aimed at taking cars off the road and reducing carbon emissions throughout the State.

DEVELOPING YOUR MODEL

The challenge facing those considering alternative funding models, however, is that each situation is unique which means that – while some best practices and lessons can certainly be shared from other jurisdictions – each project sponsor will need to develop their own alternative funding models to suit their own unique circumstances and objectives.

Our experience suggests that public owners and government leaders should consider five key questions as they develop their approach:

1. *What is the wider 'benefit' that rail delivers?* Yes, rail and transit projects move people from point A to point B, but they can also deliver a wider range of benefits such as improved environmental stewardship, increased land values, improved business connectivity, enhanced urban development and greater social cohesion. The wider 'benefit' should be an issue that all stakeholders can agree on and coalesce around.
2. *What are the long-term objectives for the project?* Managers and public owners will need to consider whether the objective of the project is to recoup as much capital as possible over the project's lifespan, or possibly more focused on social objectives such as environmental protection. The long-term objectives will partially dictate how the funding model will be structured.
3. *What control do you have over taxes, regulation and borrowing?* Clearly, a massive and complex funding scheme, like Cap-and-Trade, may not be appropriate for local and municipal governments. Similarly, few federal or central governments control property tax revenues or collection. Creating the right alternative funding mechanism often requires supportive regulation which usually requires the cooperation of various levels of government.
4. *How will you sustain the asset over the long-term?* All too often, existing funding mechanisms focus on the upfront capital required to deliver the project but ignore the longer-term funding requirements of maintenance, upkeep and improvements. Understanding the longer-term funding requirements across the project life-cycle will be critical in developing a sustainable alternative funding approach.
5. *What is your appetite or capacity for risk?* Different types of alternative models place varying levels of risk – both revenue and funding – onto the public owner. Governments must take some time to understand the current appetite and future capacity for managing and offsetting that risk.

BRIDGE THE GAP

Clearly, demand for new and improved rail and transit connectivity is not going away any time soon. Nor is there much evidence of a resurgence in government budgets and funding capacity.

For many, an additional option for filling the gap is to tap into alternative funding sources. Finding the right source and the right model will take time, careful consideration and some new thinking about how rail and transit projects deliver value.

South Africa: Big investments Big transformation

By all accounts, South Africa's plan to procure more than 7,200 new rolling stock sets a record as the largest public metro rail procurement program in history. And with a total 20-year projected budget of around US$10 billion, it is likely the largest rail project of any kind underway in the world today.

Yet while the headline numbers may be impressive, more impressive still will be the transformational impact the program will have on the national economy and economic growth and development.

By DeBuys Scott (@Debuys_Scott), KPMG in South Africa

A GROWTH IMPERATIVE

For the country of South Africa and its people, the rolling stock procurement program represents more than just another major project; it represents opportunity. More than 2.2 million people rely on the country's aging rail network to get to work every day but – with much of the existing rolling stock now almost 60 years old – reliability, speed and capacity have become significant problems, both for users and for the economy.

"Helping people and products get to their destinations quickly, reliably and on time is key to growing a middle-class and creating an attractive and successful business environment," pointed out Piet Sebola, Group Executive of Strategic Asset Development of Passenger Rail Agency of South Africa (PRASA) and the person responsible for this Procurement Program. "Having people and products sit unproductively for long hours on the roads is simply not good for the economy and won't help South Africa grow and develop."

EVALUATING THE BENEFITS

Recognizing the wider benefits that improved rail infrastructure could provide, PRASA strives to make investment decisions based on much more than simple financial cost/benefit analysis. Environmental impact, reduction in travel times, improved safety, long-term operating costs, potential for job creation and economic development are also factored into the decision-making process.

"Ultimately, it's about development and improved rail infrastructure that catalyzes development in ways that roads just can't," added Mr. Sebola. "Once you start laying out the rail lines and improving the service, people tend to respond by moving their families and businesses closer to the nodes which, in turn, drives significant development and creates massive opportunities for the population."

OVERCOMING THE CHALLENGES

PRASA faced a number of challenges in developing such a large and transformational procurement program. In part, this was because South Africa had not made a major procurement of rolling stock in more than 30 years and therefore lacked much of the experience and capacity to develop an achievable plan.

Data and market information were a particular problem. For example, PRASA needed to ensure that the national market contained enough capacity and resources to meet the threshold of at least 65 percent local content that had been set by the Department of Trade and Industry. "The data we needed on the market, its capability and capacity either

SPOTLIGHT

didn't exist or wasn't readily available so we needed to spend some time collecting and analyzing the data to ensure that we could – with authority – say that we could meet or exceed that requirement," added Mr. Sebola.

Time was another ongoing challenge. Indeed, with about half of all existing rolling stock already out of service and many at the end of their lifespans, PRASA knew it needed to move quickly to avoid serious service disruptions.

BUILDING LOCAL CAPACITY AND REGIONAL MARKETS

To help encourage the necessary ecosystem and to re-establish South Africa as a rolling stock exporter (some trains still operating in Malaysia and Taiwan, for example, were built in South Africa during the 1980's), PRASA included specific requirements for local content and local manufacturing. A new development of almost 300 hectares is envisioned, housing manufacturing facilities, supplier parks and a rail training center.

"Once the site is complete, we will be in a position to use the site and the skills that have been developed to export new systems and rolling stock across Africa which, we firmly believe, is a strong growth market for those who understand the environment," added Mr. Sebola.

ACHIEVING THE TARGETS

In April 2014, the first phase of the procurement project (a 10-year, US$5 billion contract won by a conglomerate led by Alstom) reached financial close and the first coaches are already in production. And with the environmental assessments now approved, work is ready to begin on the new manufacturing site. It is estimated that the project will create approximately 33,000 direct and indirect jobs in the first 10 years alone.

"We've made significant progress so far, both in planning and in preparation for the new system – the infrastructure which we are currently implementing include signaling, perway, station and depots modernization, amongst others – we must intensify our efforts so that when the first trains arrive and are ready to be provisioned, we are ready with our own infrastructure," added Mr. Sebola.

Mr. Sebola credits much of this success to a strong and experienced team. "As an organization, we were facing challenges that we had never experienced before and quickly recognized that we needed to build a solid team of experienced professionals who could help us from a technical, commercial and financing perspective," added Mr. Sebola. "We couldn't waste time or resources taking a project to the market that wasn't attractive to the industry and so we needed to make sure we got it right the first time."

> Helping people and products get to their destinations quickly, reliably and on time is key to growing a middle-class and creating an attractive and successful business environment.
>
> **Piet Sebola,** Group Executive of Strategic Asset Development, Passenger Rail Agency of South Africa (PRASA)

A TRANSFORMATION STARTED

While PRASA and Mr. Sebola are proud to be working on such a large and high-profile project, they are much more motivated by the transformational impact their work will have on their country and their fellow South Africans.

"We are building a rail system that will meet the needs of everyone – young or old, poor or rich, white or black – rail does not discriminate against anyone," noted Mr. Sebola. "At PRASA we're going to continue to work long and hard to make sure that vision becomes a reality for millions of South Africans."

Staying on track: 7 rail franchising insights from Australia and the UK

By Stan Stavros, KPMG in Australia

With two decades of rail franchising experience in the UK and almost as much in Australia, there is now a significant body of knowledge and experience to help public and private sector participants make key decisions around key issues such as the franchise structure, the procurement process and the management of contracts.

And while no two systems are the same, our experience suggests that – while there are still some major challenges and opportunities to overcome – the journey can be well worth the trouble.

As governments around the world search for better service for constituents and better value from assets, rail franchising is once again rising up the agenda as a mechanism to deliver on government value and service objectives.

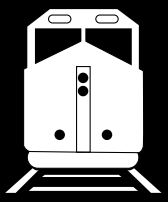
Given that it has been almost 20 years since the first generation of rail franchising in the UK and 15 years since its introduction in Australia, we believe that these two markets have seen enough trains pass over enough tracks to provide a robust body of insights into the process.

Our review of the two programs provides seven key lessons that – we believe – should be considered ahead of any public transport reform agenda.

1. **Context and leadership can help drive implementation**

   What precedes the process is just as important as the process itself. Rail franchising in Victoria, Australia, for example, occurred in a very specific context characterized by a strong government cross-industry reform agenda.

SPOTLIGHT



> Rail franchising efforts in the UK and Australia provide a rich repository of experience for public and private sector participants to draw on as they jointly consider the best public transport solutions for the future.

As such, the agenda was supported by both political will and clear leadership based on a real vision for what reform in the sector could achieve.

2. **Franchising is not an asset sale**
   Franchising is different to other types of reform and public divestment. Franchising is a process of seeking the best global operator to operate a network in partnership with government – to bring a better customer experience at a lower ongoing cost to government. But as the purchaser of public transport services, the public sector can never fully remove itself from responsibility, including retaining ownership of the rail network assets, setting fares, setting broader transport policy and planning and delivering (sometimes in partnership with the franchisee) large capital projects.

3. **Structuring of the franchise and the franchisee is critical**
   Experience in the UK and Australia both demonstrate how important it is to implement the right franchise and franchisee structure. Overall, the lesson learned is that the fewer interfaces the better; where possible, the number of franchises should be contained. The internal structure of the franchisee is equally important, with key sub contracting arrangements in Victoria's early model being replaced by genuine skin in the game at the ownership level.

4. **A shift in the risk paradigm**
   Of all the lessons learned about rail franchising over the last 20 years, the shift in the general philosophy around risk transfer has been the most profound. In the 1990s contracts pushed almost all risk into the private sector – there was no real concept of risk being taken by the party best able to manage it. More recent contracts still transfer revenue risk (as it provides a strong incentive to drive good behaviors rather than just relying on contract provisions) but now they include a sharing of this risk with a level of upside and downside protection. There is also significantly more focus on the sustainability of bids and ensuring there are appropriate arrangements in place around the stewardship of assets that have a life well in excess of any franchise term.

5. **Contract management requires a pragmatic approach**
   Experience from Australia and the UK also suggests that managing 'by the contract' may not be the most effective approach. In fact, history suggests that those who run things by the letter of the contract often end up with an unworkable relationship. As such, governments and operators will want to create a pragmatic partnership approach to both governance and the application of the contract. It's also important that the team managing the arrangement can match it with the franchisee on a day to day basis

6. **Use contract extensions to drive performance**
   Arrangements that have adopted an 'earned right' to renegotiate an extension have been effective in motivating good performance by the franchisee and providing flexibility for the government in the context of procurement requirements. In the latest franchises in Victoria, for example, flexible KPIs were added to fixed KPIs as part of this earned extension right and have worked well. Flexible KPIs can be changed from year to year to ensure focus on the most relevant needs of the day.

7. **Think about the end before you start**
   End of franchise agreements need to be appropriately covered as part of the contractual arrangements to ensure continuity of services and ability to competitively tender out the services in the future. This includes, for example, ensuring ring-fenced special purpose vehicle structures, appropriate access to assets, employees and information, and the ability to 'novate' key contracts.

STRIKING YOUR OWN PATH

Clearly, the experience gained from the Australian and UK rail franchising programs provide a significant body of knowledge and experience to help inform public and private decision-making. But it is also clear that each system and reform agenda is different and, therefore, government and private participants will need to be careful before they apply models from other jurisdictions without appropriate consideration of unique characteristics of their own system and objectives.

Our experience suggests that while – even in the UK and Australia – there are still major benefits to unlock and major challenges to overcome, the rail franchising journey can be well worth the ride.

Driving rail's value proposition:

FACILITATING FREIGHT

> Our focus is on finding investments that are not only long-term, sustainable and defensible; they also need to demonstrate an ability to create incremental value above and beyond the inherent value of the fixed assets.
>
> **Alex Yeros,**
> Managing Director, The Broe Group

Warren Buffet isn't the only savvy investor to recognize the long-term asset value and stability of freight rail. Over the past decade, strategic investors have been eagerly snapping up available freight rail assets in the US and around the world. At the same time, thousands of miles of new freight rail networks are being developed, both in developed markets and – increasingly – in emerging markets as well. Now the focus is starting to shift towards driving value from those assets – for owners, for operators and for customers.

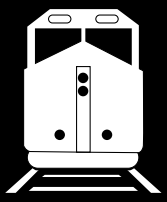
By Piyush Mishra & **Travis Hemphill,** KPMG in the US

Those active in the rail sector know that the value of rail far exceeds the sum total of its assets. As Alex Yeros, Managing Director of The Broe Group notes, "Investors sometimes overlook the fact that these aren't just assets to own; they are also operating businesses that are intertwined into local economies and, as such, carry broader risks and opportunities that need to be carefully managed if value is to be truly created."

Yet far too often, equity investors tend to view their rail assets as passive investments which, left alone, can deliver a steady rate of return over a relatively long time span. And while this is somewhat true, the reality is that – with active management and targeted investment – rail operators and owners could be creating incremental value for their shareholders, communities and customers. And, in doing so, can greatly enhance the overall value of their investments.

> The best way to improve the value of rail assets is through organic growth and so we spend a lot of time understanding our customer base and what other commodity flows they represent.
>
> **Kevin Shuba,** CEO, OmniTRAX

SPOTLIGHT



A STRONG VALUE PROPOSITION

Through their OmniTRAX subsidiary, The Broe Group has invested heavily into rail assets in North America. "Our focus is on finding investments that are not only long-term, sustainable and defensible; they also need to demonstrate an ability to create incremental value above and beyond the inherent value of the fixed assets," added Mr. Yeros. The key, he adds, is in creating the right operating company with the right mix of assets to drive new and diverse growth.

Alongside rail assets, The Broe Group also owns a sizable commercial real estate portfolio, various oil and gas assets, as well as ports, terminals and industrial complexes. "We've focused on creating entities that enable us to develop a much more stable and diversified business base around our rail assets and then we use our experience and expertise to create synergies across the business units in a way that drives value for our customers and communities."

DRIVING ORGANIC GROWTH

As the operator and developer of the Group's rail and industrial park assets, OmniTRAX focuses on understanding and responding to the shifting demands of their nearly 400 industrial customers. "The best way to improve the value of rail assets is through organic growth and so we spend a lot of time understanding our customer base and what other commodity flows they represent," noted Kevin Shuba, CEO of OmniTRAX. "It's really about creating a broader business base, a more diverse customer base and – in doing so – creating a more solid franchise to serve our customers."

Key to the OmniTRAX strategy is a focus on building a network of assets including ports, terminals and loading assets that – when combined – creates valuable solutions for customers. "For us, it's about providing a total logistics supply chain that seamlessly manages everything from the first mile to the last; it's about partnering with our customers to help them manage their flow of goods more efficiently, more reliably and more cost effectively."

MAXIMIZING INVESTMENT

In part, this requires OmniTRAX to run an efficient rail operation, ensuring that resources are allocated effectively and that investment is going to the right places to maximize value for their customers, whether that be through faster switching, loading and unloading or through improved maintenance to reduce down-time or service interruptions.

"We want to maximize the maintenance dollars we spend and one of the ways we've done that is by going mile post to mile post on our existing infrastructure to truly understand – in a granular way – what traffic is running over each mile of rail and what it will take to really harden those railroads to get the highest efficiency out of it," added Mr. Shuba.

Adding value for customers also requires the organization to invest in improving the efficiency of operations and processes at the terminals and ports which, in the case of assets managed by OmniTRAX is often handled by their own internal division, OmniTRAX Logistics Solutions.

GETTING THIRD PARTY SUPPORT

In other cases – particularly where industrial rail users and customers want to own their own assets, terminals and ports – rail value is being increased through the support of supply chain management solutions providers who are increasingly starting to invest in infrastructure to support their customer's needs.

"In order to deliver the right value proposition to our customers, we often own the assets that we use to help our clients move their products efficiently from point A to B," noted Nathan Savage, Sr. Vice President and Group Leader at Savage Services, a US-based global logistics and material handling organization. "In some cases, we own the terminals but in others, we've entered into joint ventures with our customers to ensure that we're operating as part of their team and delivering a seamless solution."

DRIVING EFFICIENCY TO ENHANCE VALUE

One area that Savage often sees customers struggle with is non-core processes and logistics requirements that are either managed inefficiently or that could be improved to drive incremental value for the organization. "It's much more than just managing a supply chain – it's about finding the efficiencies that can, in turn, increase the yield of the asset thereby driving incremental value," added Mr. Savage. "We are always asking ourselves how we can increase velocity, efficiency and safety in a way that both reduces costs and helps our customers do better."

For rail operators and owners, these types of supply chain management and logistics companies can help deliver renewed value across the asset. "The railroad is often quite effective when it's about the long-haul, but it's what you do at the first mile and the last mile that really makes the difference – the industrial switching, the movement of the locomotives, the safety and efficiency of the loading and unloading – it's all about getting those trains back out on the line as quickly and safely as possible which, ultimately, is a win-win for everyone involved."

At the end of the day, Savage, Yeros and Shuba all seem to agree that – while the rail sector environment is often becoming more complicated, there is more value to be harnessed from freight rail assets. "You can't shy away from complicated situations because, oftentimes, those are where the greatest value are to be had," added Mr. Shuba.

> We are always asking ourselves how we can increase velocity, efficiency and safety in a way that both reduces costs and helps our customers do better.
>
> **Nathan Savage,** Sr. Vice President and Group Leader, Savage Services

Emerging Trends in infrastructure

Infrastructure is a story of evolution. It drives social and economic development. It enables us to renew our public services and physical surroundings. It allows societies, economies, companies and individuals to live to their full potential.

The way we approach infrastructure itself is also evolving. Some of the shifts are sudden and disruptive. Others evolve slowly, ebbing and flowing in and out of political consciousness based on changing circumstances.

At KPMG, we continuously track and report on the tides and trends driving the world's infrastructure markets. Based on our experience, here are what we believe to be the top 10 Emerging Trends in infrastructure for 2015.

Trend 1

GOVERNMENTS TAKE ACTION TO UNCLOG THE PIPELINE

Infrastructure has never been higher profile. The G20 Summit in Brisbane in November 2014 put the topic of infrastructure squarely on the global agenda as governments recommitted themselves to helping bridge the infrastructure gap.

The G20 Summit also saw the formation of a Global Infrastructure Hub which – if armed with the right staff, scope and priorities – could help unlock trillions of dollars in private infrastructure spending.

At the national and local level, we have also seen a growing number of governments starting to take a more interventionist approach, often driven less by a desire to fill the capacity gap, and more by a lack of trust in private sector financing markets and a deep desire to accelerate delivery.

Taken on balance, the move towards greater government intervention – at the multilateral and the national level – indicates that public discourse has started to shift away from merely admiring the problem of infrastructure delivery to taking action to solve it.

SOME OLD AND SOME NEW IN 2015

A number of the trends that we identified last year remain key issues today. Many have themselves evolved. In 2014, we argued that projects were stuck in pipelines; this year we have noted significant moves by governments, multilaterals and development banks to 'unclog' the pipeline. Cities were also a big topic in 2014 and continue to be so in 2015, but with a larger emphasis on urban mobility. Asset sales and improved asset management played a significant role in our Top 10 last year and again this year.

Other trends from last year continue to simmer. Affordability of infrastructure remains a key challenge, as does the need for greater transparency and control against corruption. More worrisome is that technical skills continue to be underdeveloped but international demand for infrastructure professionals and capabilities only continues to grow.

This year's list includes a number of new trends that have risen up the agenda as societies struggle to balance necessity against opportunity in prioritizing infrastructure spend. Political uncertainty and regulatory reform are becoming key risk factors. Water scarcity, security of supply and the silent battle to control resources are already starting to impact infrastructure decision-making. Development banks and multilaterals are recalibrating their targets to focus on leveraging private finance.

As always, the world continues to change. We only hope that this year's insights provide a worthwhile perspective on key trends and opportunities facing the sector.

Trend 2

MARKET REFORMS – STATUS QUO IS NOT FIT FOR PURPOSE

As governments move to reform the market structure across a number of infrastructure sectors, many infrastructure and regulatory leaders are starting to recognize that traditional price-cap regulation – while popular with consumers – may be insufficient to enable utilities and other regulated sectors to meet the growing demand for additional capacity or to adapt to new technologies.

In reforming the markets, regulators and politicians need to balance two key responsibilities. The first is to provide certainty to investors that the regulatory regime will remain stable, consistent and supportive of ongoing investment. The second is to create mechanisms that balance the need to protect consumers with the need to ensure that investors receive sufficient returns allowing them to continue to invest in assets.

Once again, governments and regulators will need to take a long-term view of their infrastructure needs, growth projections and demographic forecasts to make sure they are creating a sustainable and encouraging environment for infrastructure investment.

Trend 3

POLITICAL AND REGULATORY RISKS RISE UP THE AGENDA

Potential risks associated with political and regulatory uncertainty are not just a problem affecting developing countries; they apply equally to the developed world. Looking at the long list of much-needed infrastructure projects that have recently stalled as a result of election results, it becomes clear why investors are concerned that their projects may die at the ballot box.

Uncertainty surrounding regulation also creates significant challenges. In many markets, we have seen a significant shift in mindset that seems to favor consumer protection over investor protection. But while this may appeal to the electorate, it can also deflate investor confidence and undermine contract certainty.

Many are already taking valiant steps towards depoliticizing the infrastructure agenda by developing national infrastructure plans and robust processes for evaluating needs and prioritizing projects, but more must be done to create the right political and regulatory environment to ensure a steady flow of capital to finance worthy projects.

MAJOR INTERDEPENDENCIES: POLITICS

Infrastructure is – and always will be – a fundamentally political field of endeavor. Yet over the past few years, we have seen a significant increase in the influence of politics over the hard realities of infrastructure development.

This year's trends contain a number of issues that – in large part – are driven by political issues. Market reforms, political risk, government intervention in financing markets, investment prioritization, public sector asset sales and urban mobility are all the stuff of political platforms and electioneering. The challenge is separating political rhetoric from the needs of society.

Trend 4

CITIES SHARPEN THEIR FOCUS ON URBAN MOBILITY

While urban areas continue to serve as a crucible of economic growth and development in most countries, the agenda of the city infrastructure debate seems to have focused more clearly on the issue of urban mobility over the past year.

Not only does urban mobility allow for a freer flow of goods, capital and people within cities, it also provides a means for the world's urban poor to access jobs, social services and education opportunities. Raising the urban poor out of poverty ultimately leads to larger tax revenues and more productive cities. Urban mobility projects often deliver long-tail social and economic benefits far beyond those identified in most cost/benefit analyses. The challenge is to adopt an appraisal methodology that can capture all these benefits.

Over the coming year, expect to see more urban mobility projects announced in almost every market (but particularly in those going into an election cycle). The opportunities for providers, investors and operators should be significant.

Trend 5

THE SHIFTING ROLE OF MULTILATERALS AND DEVELOPMENT BANKS

With renewed focus on enhancing the flow of long-term capital for infrastructure development – particularly into developing markets – we have seen a significant shift in the operating models and performance targets of many multilateral and development banks.

Rather than measuring themselves purely on their quantum of lending, a number of today's development banks and multilateral institutions are increasingly moving towards targets related to the amount of private sector capital they are able to leverage.

This is a welcome development. We believe that development banks and multilaterals have a vital role to play in shaping the development of infrastructure markets. However, concerns have also been raised that 'subsidized' development loans can distort local infrastructure debt markets by crowding out bank financing and other private debt solutions.

We believe that governments who offer subsidized lending should consider directing their subsidies through other channels and thereby concentrate on acting as catalysts for private sector investment.

MAJOR INTERDEPENDENCIES: LONG-TERM CAPITAL

While some markets (particularly in Asia, Africa and South America) continue to struggle with a lack of long-term capital for infrastructure development, there is now a growing pool of debt and equity available for investment into infrastructure. The much-anticipated entry into the market of Asian institutional investors promises to add even more capital to the mix.

The challenge is in matching capital to worthy projects. Access to long-term capital is a necessity for infrastructure investment and renewal. More must be done to ensure capital can flow to the regions and projects with the ability to deliver the greatest returns.

Trend 6

BIG COMPLEXITIES START TO IMPEDE BIG PROJECTS

The world is full of large ambitious projects aimed at solving major infrastructure challenges. However, over the past year we have seen a number of much-needed mega and cross-border projects delayed (some indefinitely) as project managers, investors, developers and owners grapple with the complexities of moving larger projects from the drawing board to the field and across the finish line.

Many of the challenges are fairly easy to identify. Some projects are unaffordable and struggle to secure appropriate financing (much of which is currently provided through development and export credit banks). Others are frequently tied up in red tape and approvals.

The more persistent and pernicious issue, however, relates to skills (a challenge certainly not limited to megaprojects). Given that many of the more experienced project managers are now on the verge of retirement, we expect the competition for skilled talent to continue as a trend for many years to come.

Trend 7

STRIKING THE RIGHT BALANCE BETWEEN NECESSITY AND OPPORTUNITY

While a growing number of jurisdictions have started to develop and implement national infrastructure plans aimed at 'depoliticizing' infrastructure decision-making, the challenge is that many of these plans place a disproportionate value on economic versus social infrastructure.

Ultimately, this is a question of long-term versus short-term priorities. Economic infrastructure (when developed properly) can deliver a much-needed shot in the arm to national and local economies. But over the long-term, social infrastructure is also needed to encourage the economic inclusion of people moving out of poverty and support an aging demographic.

Striking the right balance will take a national consensus that brings together economic and social imperatives as well as more effective methodologies for evaluating those benefits. But planners will also need to remember that it's not a choice of one over the other, but rather a well-planned and executed combination that overlays long-term objectives on top of the realities of immediate need.

MAJOR INTERDEPENDENCIES: THE SKILLS AND CAPABILITY GAP

One of the greatest barriers holding back today's infrastructure pipelines is not lack of capital or resources, but rather a dearth of appropriately-skilled project managers and engineers.

Training programs such as those in Europe and Asia will help fill some of the gap, but the reality is that today's complex projects require real experience and on-the-job insight, neither of which can be taught but must be learned. Infrastructure providers, developers and owners will want to think about how they might be able to retain their more experienced professionals while ensuring they are taking the time to share their insights with newly-trained peers.

Trend 8

STRIVING FOR BETTER ASSET PERFORMANCE

As governments aim to improve public services, many are starting to benchmark the performance of public utilities against best practice and explore alternative delivery and ownership structures. Many have considered introducing private operators and leveraging commercial models in order to improve efficiency, cost and customer experience.

Governments are also keen on asset privatization for financial reasons: it means that future investment can be moved off of the public books, and returns from asset sales ploughed back into developing new infrastructure (which, in turn can be privatized in a virtuous cycle of investment recycling).

It is clear, however, that deal flow will always be restricted in situations where privatization or restructuring of government assets remains a politically-charged topic. Success will require politicians, regulators and the private sector to work together to ensure deals and regulations are structured appropriately to balance the needs of consumers and investors, while still gaining the support of voters.

Trend 9

RESOURCE SCARCITY DRIVES INVESTMENT

All governments want to improve their energy, water and resource security. Many recognize that scarcity of these key elements will hobble growth and – very possibly – lead to significant political conflict in the future. Water efficiency has also become a key objective for infrastructure assets, particularly given the majority of the world's water is used for industrial and agricultural purposes.

The development of new and more efficient infrastructure will be key to reducing the impact of resource scarcity, but it is only one component. More valuable still would be the removal of existing subsidies on water and energy (a practice prevalent in both developing and mature markets) which will effectively drive conservation and better align costs and revenues to the asset life-cycle.

However, some progress is being made. China, for example, is trialing the trading of water rights between municipalities, with water-rich areas entitled to charge a truer, unsubsidized price.

MAJOR INTERDEPENDENCIES: TECHNOLOGY

One would be hard-pressed to deny the transformative power of technology. Yet the infrastructure sector has – to date – seemed unable to embrace technology to deliver fundamental improvements in order to keep up with the pace of change in the world around it.

This is a lost opportunity. Technology may very well hold the answer to many of the biggest problems facing the infrastructure sector today: efficiency, productivity, safety, longevity and costs. Given the critical role infrastructure plays in society, we should be the leaders of innovation not the laggards.

Trend 10

INFRASTRUCTURE PLAYERS GO GLOBAL

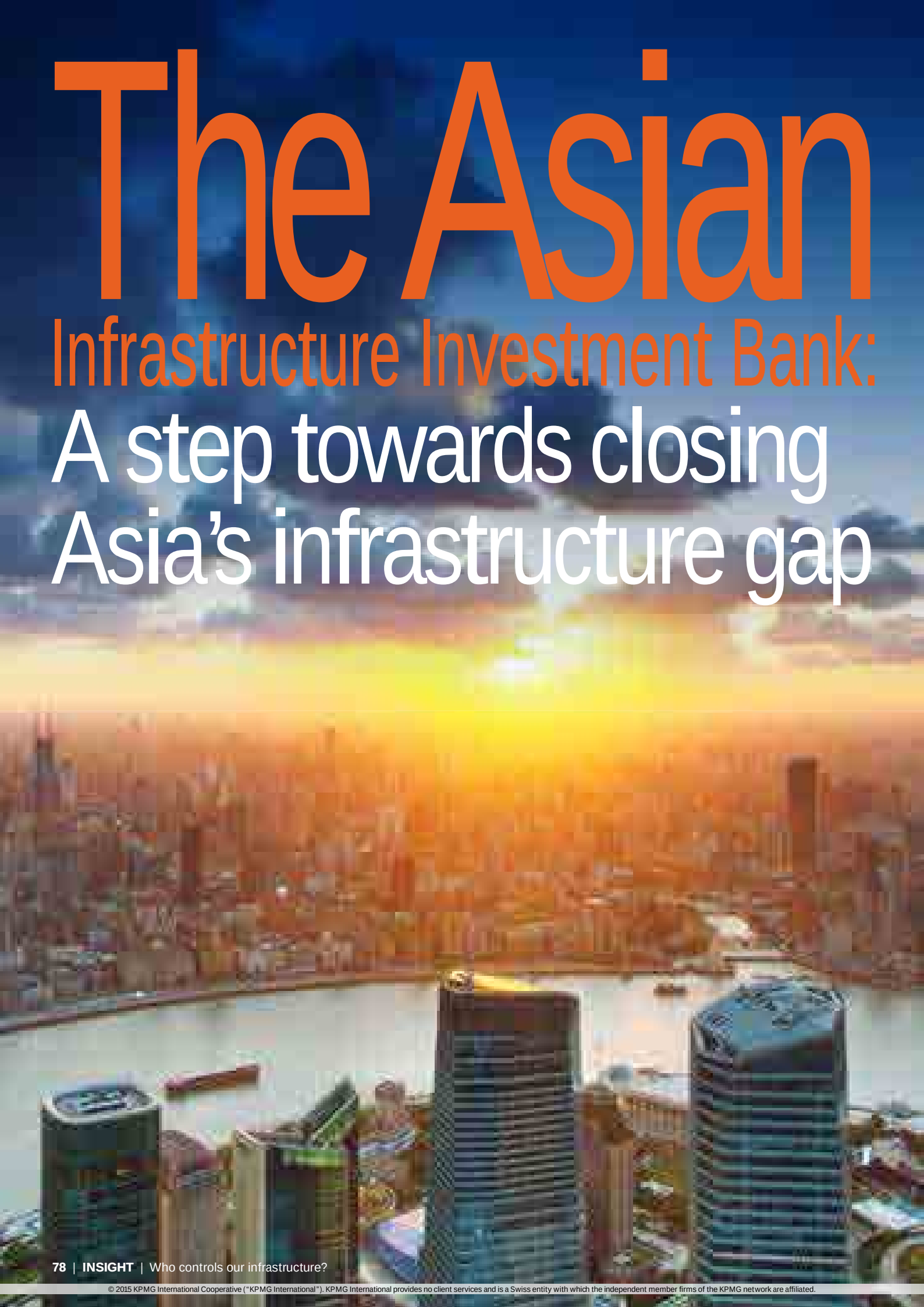
While most infrastructure is decidedly local by nature, it is also quickly becoming a global game. Investors have long taken a more global view of infrastructure. And over the last decade, we have also seen the emergence of 'global developers' such as the Japanese trading houses, fast arriving Chinese firms or Spanish contractors forced to seek new opportunities outside their domestic market.

But it is the rise of the global operations organizations or 'concessionaires' that have been most visible with specialist airport, railway, water, port and road operators as well as energy generators and distributors vying to compete for tenders in both mature and emerging markets.

While this is certainly a positive development, providers must ensure that in the rush to capture new assets and tenders, they take the time to seriously consider the risks and opportunities in the markets in which they hope to operate.

The Asian Infrastructure Investment Bank:

A step towards closing Asia's infrastructure gap



With more than US$100 billion in available capital and the strong backing of Asia's (and most of the world's) major economies, expectations for the Asian Infrastructure Investment Bank (AIIB) are high. And – given the size of Asia's current infrastructure financing gap – the need is certainly clear. While many of the bank's foundational issues are still to be clarified and formalized, we believe the AIIB will be a welcome next step in Asia's development story.

By Richard Dawson (@richardrsdawson), KPMG in China

A NEW INFRASTRUCTURE BANK IS BORN

When China's President Xi Jinping announced the formation of an Asian-focused infrastructure investment bank in 2013, most observers sat up and took notice – China's government is not known for making promises it does not keep.

Just 2 years later, any lingering doubts about the viability of the Asian Infrastructure Investment Bank (AIIB) are now gone. As of early 2015, 57 countries had signed up to be perspective founding members. Not surprisingly, virtually all of Asia's major economies – including India and Indonesia – have signed up. So, too, have most of the world's leading economies including the UK, Germany, Italy, France and Brazil.

TWO PATHS TO THE SAME DESTINATION

While many had originally worried that the AIIB might effectively 'compete' with existing development banks – such as the Asia Development Bank (ADB) and the World Bank's International Finance Corporation (IFC) – the reality is that the bank's objectives are likely more complimentary than they are competitive.

The ADB, the IFC and other national development funds are principally focused on alleviating poverty. The AIIB, on the other hand, is fully dedicated to unlocking financing for infrastructure projects which, in turn, can drive economic growth and help pull people out of poverty.

Recognizing this potential, many of the major global finance institutions have announced that they would cooperate with the AIIB. As one International Monetary Fund (IMF) official recently noted, they are comfortable with the idea of a bank that puts together finance for infrastructure, because of the huge need for infrastructure in emerging markets countries.[1] ADB President, Takehiko Nakao, has said that the ADB would also be happy to cooperate with the AIIB, including co-financing.

A DROP IN THE BUCKET LEADS TO RIPPLES THAT SPREAD

Likely the greatest reason to dismiss concerns about competition, however, is the massive financing gap currently haunting the Asian region. According to the ADB's own reckoning, Asia needed US$8 trillion of investment into infrastructure between 2010 and 2020 to meet growing demand.[2] A vast number of bankable projects are on offer across the region, many ranging up to the billions of dollars in value. The AIIB's US$100 billion appears, on the face of it, to be a drop in the bucket when compared to this massive need; however, with leverage and mobilization of third party capital it may begin to make decent in-roads into the funding gap.

> The greatest measure of success for the AIIB won't only be how many members it has, nor how many projects it funds but rather how much third party capital it is able to mobilize.

The greatest measure of success for the AIIB won't only be how many members it has, nor how many projects it funds but rather how much third party capital it is able to mobilize, whether that be from governments, strategic sponsors, infrastructure funds, commercial banks or other multilateral organizations.

SOME QUESTIONS REMAIN

Progress continues to be made. In June, the 57 Prospective Founding Members gathered for a Signing Ceremony in Beijing and by the fall, a President will be elected (by Super Majority vote at the Board of Governors). However, there are still a number of big issues that need to be answered before the AIIB takes its place on the world stage. Will financing be provided through debt or equity? Who will sit on the board of directors? How will the bank ensure transparency in all its activities?

While these are all important questions, we believe that – over the remainder of year – China and its partners will make significant headway providing answers, clarity and transparency to stakeholders and observers. Now that China's executive has made the AIIB a top priority, history suggests nothing will come in the way of the promise being delivered.

A BOOST FOR THE INFRASTRUCTURE SECTOR

The future of the AIIB should be of particular interest to international and Asia-based infrastructure participants. But it's not just the local Asian contracting community that will benefit from this institution. So, too, will many of the international strategic sponsors and contractors with the skills, capabilities and experience to deliver in this region.

We anticipate significant opportunities will also start to emerge for other players – airport operators, specialist equipment providers, power distributors and the like – as these projects start to develop. And, in short time, some of the more derivative opportunities are also likely to enter the market as new airports unlock unknown tourist destinations and new transit options open up more land for development.

A WELCOME PLAYER AT THE TABLE

Unless something unexpected occurs to derail the bank's formation, we expect the AIIB to represent a welcome step towards closing Asia's infrastructure gap. And a welcome source of new projects and investment opportunities for public and private organizations.

Those foreign players seeking to gain a foothold in Asia may want to start working with their respective governments to see how they can best align their interests to those of the AIIB. Those already in Asia, however, may prefer to just focus on building up their capabilities in the region… and quickly.

1 http://www.cnbc.com/id/102526769
2 http://www.adb.org/news/public-private-partnerships-key-meeting-asias-8-trillion-infrastructure-needs-study

Bienvenue chez FRANCE

John Kjorstad (@JohnKjorstad), KPMG in the UK, **Wilfrid Lauriano Do Rego** & **Charles Abbey,** KPMG in France

John Kjorstad, KPMG in the UK, and Wilfrid Lauriano Do Rego & Charles Abbey, KPMG in France, highlight investor trends for French inbound and outbound infrastructure investment.

France is steeped in global infrastructure investment. Its project finance banks are "résilients" and consistently at or near the top of global rankings; its equity funds and institutional debt providers are "*sophistiqué*" – finding innovative solutions to unlock the true potential of capital markets in infrastructure; and its industrial sponsors are "*stratégique*" – successfully winning work and delivering major projects all over the world.

However, a quality brand and a wealth of market experience does not automatically translate into ongoing success. Like many of their international competitors, French investors are all facing the same issue – finding the right asset and risk profile to invest in at home or abroad.

LACK OF MATURE ASSETS

The first characteristic defining French infrastructure investment is a lack of available brownfield assets. It has been difficult to educate the general public on the critical differences between greenfield infrastructure and secondary market investments. Institutional investors prefer mature assets over the riskier greenfield primary investment opportunities favored by large construction companies, utilities and major equipment suppliers. A lot of these large corporates operate an integrated approach and are not divesting the plethora of assets currently sitting on their balance sheets. By not releasing these assets into a secondary market, the owners are not efficiently recycling their capital – transferring mature assets to institutional investors and applying the capital gain to new primary greenfield opportunities.

FRENCH INBOUND INVESTMENT

The good news for French infrastructure is that there is a lot of upside to come, and international firms remain active in pursing these investments. There are a number of greenfield projects originally structured as public-private partnerships (PPPs) that will mature in the coming years and become attractive brownfield opportunities. This trend is likely to produce more churn in the merger and acquisition market.

In the meantime, there are currently a number of regional airports in France that are attracting interest from all over the world. In February, the French government introduced a new law that allows for the privatization of airports in Nice and Lyon.[1] It is expected that these assets will be launched into the market once the law passes in the senate.

France also remains a buoyant and mature market for renewable energy investments – particularly onshore wind and photovoltaic solar. These assets are supported by long-term feed-in-tariffs that provide good visibility on returns. The greenfield market continues to have political support as the government seeks to increase its renewables target to 32 percent by 2030, while reducing the share of nuclear power on the grid from 75 to 50 percent.[2]

> Like many of their international competitors, French investors are all facing the same issue – finding the right asset and risk profile to invest in at home or abroad.

Toll road concessions have also been a popular and contentious area of private investment. France's Socialist government has been engaged in a long running showdown with private operators to freeze tolls and revise long-term contracts that it regards as too generous.[3,4] In 2014, the European Commission approved a EUR3.2 billion plan where operators agreed to bear the cost of upgrading French motorways in exchange for an average 3-year extension of their concessions. After months of polemics, a resolution was announced in April ending the standstill and allowing the capex plan to move ahead.[5]

State intervention and threat of increased regulation are two major risks concerning investors in French infrastructure. These risks are acutely being felt in other politically-charged European infrastructure markets as well. However, given public budget constraints and ongoing financial difficulties, it's likely that the French government will continue to seek private investment in infrastructure ahead of the next major election in May 2017.

FRENCH OUTBOUND INVESTMENT

France is also well known for internationally-minded outbound investors like Meridiam, Antin Infrastructure Partners, OFI InfraVia and Ardian, four Paris-based equity infrastructure funds investing capital beyond French borders. The country also has large pension funds like EDF Invest becoming more active in the European market.

Europe's secondary market for infrastructure continues to draw strong interest from investors who expect to see significant portfolio rotation in the coming years. The earliest pure infrastructure equity funds were first raised in the mid-to-late 2000s and many of them are nearing the end of their first fund investment cycles. Given the fixed duration of some funds, it is likely that some assets will be flipped, adding growth to the existing secondary market deal flow.

French infrastructure funds have generally been conservative, limiting equity investments to Western Europe and the secondary market. Earlier this spring Ardian acquired a 65 percent stake in Spanish toll-road operator Tunels and took joint control of Italian airport operator F2i Aeroporti. Last year, OFI InfraVia invested in a natural gas transportation system in the North Sea connecting offshore gas fields of The Netherlands and United Kingdom sectors to the Dutch Gas Transport Services network. These are staple investments for European infrastructure funds, and outbound French investment remains healthy.

Meridiam, meanwhile, has been a notable exception in this field investing primarily in greenfield projects in and beyond Europe. The fund is well established in North America and has even expanded into Turkey, closing the Adana Integrated Health Campus[6] in December 2014

1 https://ijglobal.com/articles/95251/french-airport-privatisations-likely-next-month
2 http://www.rechargenews.com/wind/1387589/2015-OUTLOOK-Next-steps-for-renewables-in-Europe
3 http://www.reuters.com/article/2015/01/27/motorway-freeze-idUSL6N0V62L220150127
4 http://in.reuters.com/article/2015/04/01/motorways-france-idINL6N0WY3K520150401
5 http://www.reuters.com/article/2015/04/08/france-motorways-idUSP6N0VE01K20150408
6 https://ijglobal.com/articles/94615/financial-close-for-turkeys-adana-hospital

Tax, Sovereign Wealth Funds and Pension Funds:

A NEW APPROACH FOR A NEW ENVIRONMENT

As infrastructure begins to come into its own as an asset class, the topics of tax and transparency have quickly rocketed up the investment agenda. For institutional investors – Sovereign Wealth Funds (SWFs) and pension funds in particular – the risks associated with tax have become acute.

By David M. Neuenhaus, KPMG in the US

Over the past decade, infrastructure has become the darling of SWFs and pension funds. By the end of 2013, infrastructure had already become the third most active asset class for SWFs (behind fixed income and public equities) with 57 percent of SWFs saying they were active in the sector.[1]

Many of the larger and more established pension funds have also been voracious in their appetite for infrastructure investments. Allocations towards infrastructure more than doubled between 2007 and 2010.[2] And as of April 2014, seven of the top ten institutional investors into infrastructure were pension funds.

UNDER THE MICROSCOPE

However, despite the critical role that these funds played in keeping the markets open during the credit crisis of the past decade, the reality is that most outside observers – the public, the media and even politicians – often still view infrastructure investments by foreign SWFs and pension funds with some suspicion.

As the European Union noted in 2008, "SWFs raise concerns, in particular with regard to the opacity of the way in which some of them function and the non-commercial use that could be made of them. These SWFs sometimes trigger protectionist reactions. Some are concerned that their investments are aimed at taking strategic control of technology or expertise, or even that they may be used by certain governments as a means of pressure."[3]

SELF-REGULATING THE SECTOR

Over the past decade, however, new regulations and standards have been developed which – if properly applied and adhered to – should bring increased transparency and ease deal-making for SWFs and pension funds.

In 2008, a number of SWFs came together with the IMF to develop the Santiago Principles, a voluntary framework of principles and practices aimed at improving governance and accountability arrangements at SWFs and encouraging sound, prudent conduct of investment practices.[4] The Santiago Principles are widely endorsed by SWFs around the world (particularly by members of the International Federation of Sovereign Wealth Funds who must endorse the Principles as a condition of membership) and are more broadly seen as a 'leading practice' for state-owned investment vehicles of all types.

Another key response by the sector has been the growing adoption of the Global Investment Performance Standards (or GIPS), a common set of ethical standards designed to improve the way investment performance is reported. Compliance with GIPS not only provides pension funds with more legitimacy by virtue of complying with a global investment standard, it can also reduce complexity by providing a common approach to performance calculation when investing in overseas assets.

Alongside the Santiago Principles and GIPS, a third set of standards aimed at improving investment transparency and reducing tax avoidance is now starting to emerge under the auspice of the OECD and the G20. Known as the BEPS Project, the initiative will impact certain

1 https://www.preqin.com/docs/newsletters/inf/Preqin_INFSL_Nov_13_Sovereign_Wealth_Funds.pdf
2 Source: Public Investment Association of Canada (via http://www.taylor-dejongh.com/wp-content/uploads/2012/02/Pension-Fund-Direct-Investments-in-Infrastructure.pdf)
3 http://europa.eu/legislation_summaries/internal_market/single_market_capital/mi0003_en.htm
4 http://www.ifswf.org/pr/pr21.pdf

1.1 SWF principals/standards

Standard/Principle Developed by	Santiago Principles IFSWF	GIPS Chartered Financial Analyst Institute	BEPS OECD/G20
(Potential) Impact	• Targets SWFs • Intended to facilitate transparency in market • Ensures best practices and fairness • Lacks general enforcement body	• Applicable to pension funds • Intended to facilitate transparency in market • Ensures best practices and fairness • Lacks general enforcement body	• Applicable to all investors • Intended to facilitate transparency in market and reduce tax avoidance • Ensures best practices and fairness • Working with G20 countries to ensure enforcement

tax aspects of infrastructure investors and likely increase the reporting burden for investment managers. Demonstrating compliance with specific BEPS tax rules, however, will be key to mitigating the impact of the public tax morality debate on SWFs and pension funds.

TAX ON THE AGENDA

While complying with these standards and principles would clearly go a long way towards improving transparency, the reality is that many fund investors may struggle to achieve compliance without significant change – not only in their investment, reporting and business models, but also in the way they plan for and manage their tax exposure on infrastructure-related investments.

Thankfully, a growing number of executives at SWFs and pension funds recognize the need for a transformation in their approach to tax. Many have realized that tax 'risk' is not confined to the technical risks (those that emerge as a result of differing views between taxpayers and tax authorities); but rather extend much farther into operational risks, reputational risks and risks related to a change in the tax code or administration (see chart 12).

At the same time, they are also increasingly recognizing that transforming the tax function is not about doing more of the same, only faster. It's about fundamentally rethinking the way the tax function supports and adds value to the organization and the individual investment managers and then creating the right supports and processes to enable the team to achieve its vision.

This will require concerted focus on three key areas: people, process and technology. Having the right people in the right place with the right skills to support the business is key to helping managers make smart tax and investment decisions. Clear and streamlined processes are critical to ensuring that all data and reporting is aligned and that tax risks are quickly and efficiently identified. And as the sector becomes more complex, and deals and investment structures become more intricate, technology will also be central to standardizing processes and controls across complex markets and dynamic economies.

A NEW ENVIRONMENT; A NEW APPROACH

Clearly, each SWF and pension fund will need to follow their own path depending on their individual policies, tax risk profiles and investment programs. However, we believe that those organizations that are able to take a more holistic view towards compliance will greatly improve their position in the market and deliver significant competitive advantages when entering into and maintaining foreign investments.

The bottom line is that – beyond demonstrating compliance – those organizations that successfully adopt these principles should be well positioned to leverage their transparency as a commercial market differentiator and use this position to improve their communications with not only their own stakeholders, but also those of their target infrastructure investments.

1.2 SWF/Tax Risk

	Risk
Technical risk	• Risk of differing views between taxpayers and tax authorities. The degree of risk is typically highly sensitive to facts and assumptions.
Operational risk	• Risk of loss due to inaction of people or inadequate processes. There are two types: – Direct control: actions that the organization's own employees must undertake to achieve the intended tax outcomes. – Influence: actions investment partners must undertake to achieve the intended tax outcomes.
Reputation risk	• Risk of loss may arise when a proposed tax position is contrary to widely understood tax policy objectives of a particular governement. The threshold to test is generally the opinion of the governament policy makers rather than local tax collecting authorities.
Change of law risk	• Risk of loss due to actual or proposed changes in law. This is an inherent risk of investing. To manage this risk an entity must focus on changes in tax law or administrative practice that are reasonably foreseeable and have a measurable impact on the after-tax returns from the investment.

Benchmarking the tolling sector

By Stephen Beatty (@stephencbeatty), Americas and India Head of Global Infrastructure

> Improved operating efficiency can lead not only to direct cost savings but also to increased usage, extended asset life, and enhanced customer satisfaction. More importantly, perhaps, improved asset efficiency can also lead to improved revenues for asset owners."

The benefits of improved asset management in infrastructure can be significant. Improved operating efficiency can lead not only to direct cost savings but also to increased usage, extended asset life, and enhanced customer satisfaction. More importantly, perhaps, improved asset efficiency can also lead to improved revenues for asset owners. And for governments, this means more money to invest into existing and new infrastructure.

ROADS IN THE CROSSHAIRS

Our experience suggests that one of the first places governments tend to look for improved efficiency is in their roads. Recognizing that the public is often willing to pay more for improved service, we have seen a dramatic increase in the number of toll roads[1] operating around the world. Some are government owned and operated. Others have been transferred to the private sector under public-private partnership (PPP) arrangements.

At the same time, technology has enabled a gradual – but profound and sustainable – shift in the way that toll roads are operated. And as a result, every element of the value chain has been affected, from the users' driving experience to the core operations of the back office. Open road tolling (ORT), electronic toll collection (ETC), Global Positioning System (GPS) and new back office systems and technologies are revolutionizing the industry and streamlining operational efficiency.

LOOKING FOR THE 'NEXT LEVEL' OF EFFICIENCY

While many public and private asset owners have made great strides in 'sweating' their road assets, most are now looking for new opportunities to wring further efficiencies out of their operations. Asset management has become a hot topic in the road sector and owners want to learn about leading practices and understand how they compare to their peers around the world.

Recognizing a significant lack of reliable global comparative data for the toll road sector, KPMG collected data from more than 40 tolling companies and agencies worldwide to – at least start – building a better understanding of what 'good' performance looks like and, eventually, a global benchmark to help compare key metrics such as cost to collect or operational efficiency.

WHAT WE FOUND: KEY STATISTICS

KPMG International's *Toll Benchmarking Study 2015* provided some compelling results and interesting data points. For example, the research found that:

- **Toll operators are implementing a wide array of toll collection approaches.** Ninety-one percent of all respondents said that they now offer some form of ETC. Forty-three percent say their agency uses ORT and 23 percent said they use some form of video billing mechanism.
- **Technology is being upgraded.** More than half (53 percent) said that they had upgraded their tolling system within the last five years and a further 18 percent said they are constantly upgrading their equipment and systems.
- **There are significant variations in what operators include in their cost to collect calculations.** However, the data indicates that some tolling operators' cost to collect can be as low as 13 percent of revenues, whereas others may be as high as 60 percent or more.
- **On average, the industry spends US$0.43 per transaction.** The most cost efficient toll operations tend to report costs of less than US$0.26 per transaction while the more inefficient operators report costs of more than US$0.59 per transaction.

A BENCHMARK FORMS

As the first of its kind, the process of creating this comparative review has been challenging. Data sources and metrics are often inconsistent; wide variations exist in the way operators report their costs; and there is little consistency in the terminology and definitions applied across the sector. Clearly, more work will need to be done across the sector to drive more consistent metrics and reporting.

However, we believe this report provides important data for the sector. And, when combined with the practical insights and context offered by KPMG member firms' top roads and tolling professionals, starts to offer governments and private organizations the information and advice they need to become more efficient and drive improved results from existing assets.

The efficiency of toll roads is important. Not just for tolling operators, but also for governments, investors and the driving public. We hope that, as the first in a series of ongoing surveys, we are adding to the body of knowledge driving decision-making in the toll road sector.

To read more, **visit kpmg.com/tolling.**

1 According to the International Bridge, Tunnel and Turnpike Association (IBTTA), the US has added more than 500 miles of new toll roads since 2011.

> The reality is that project acceleration often involves high stakes, large dollar commitments and immense pressure to minimize potential losses.

Project acceleration:

Saving the day from schedule delays

By Andrew Pollard & **Brian Relle,** KPMG in the US

When it comes to infrastructure planning and execution, schedule delays are inevitable. Large capital projects are complex undertakings with the potential for failure, even under the best management practices. The key to meeting project milestones is in making sure that when delays occur, the project team knows what options are available to accelerate the project and how to evaluate the cost tradeoffs for those options.

At some point, most infrastructure projects will experience delays to the development schedule, which can threaten the project's expected completion date. This is especially true for multi-year or highly-complex projects where owners may face multiple delaying events over the course of planning and execution. These delays can be caused by any number of unexpected issues – engineering shortfalls, regulatory delays, differing site conditions, poor subcontractor performance, material shortages, weather events, or political instability.

IT'LL COST YOU

The problem is that when construction projects fall behind schedule, it often takes a significant effort by the project team and senior management to recover the lost time caused by schedule delays. As evidenced by high-profile projects that have fallen under financial scrutiny, the added effort to get projects back on schedule often comes at a cost premium.

Of course, the simplest way to adjust for project delays is to extend the contract performance period. But depending on the nature of the project, delaying the expected completion date may not be a viable option (consider, for example, the impact that project delays could have on a major sporting event like the Olympics). In these cases, the only real option is project acceleration.

Project acceleration – essentially any action taken to increase the speed of construction to recoup lost time – can either be 'self-initiated' by the contractor (often to avoid liquidated damages) or 'directed' by the project owner. Generally speaking, 'self-initiated' project accelerations tend to cost the contractor, whereas 'directed' accelerations are often covered by the owner. In either case, the fact remains that it takes money and resources to accelerate a project. Costs increase for temporary materials – like scaffolding – and additional construction equipment is often brought to the site, labor costs rise due to overtime and shift work, the costs of construction support and supervision increase, and budgets must be adjusted for declining labor productivity and rework.

CHOOSING FROM YOUR OPTIONS

Since every major capital project is unique, there is no 'silver bullet' for solving project delays. Rather, it requires project teams to balance their options for project acceleration against the expected cost of their action and its potential impact on delivery.

Project teams have a number of project acceleration options to choose from. Oftentimes, project teams will use more than one option to achieve their acceleration objectives. Some of the more popular approaches include:

- *Going into overtime:* Overtime is one of the most common forms of acceleration and can be accomplished with existing labor resources who are familiar with the job. Limited overtime can be used for time-critical work, while extended overtime is often used to correct for major project delays or to complete a project early.
- *Adding manpower:* Adding extra manpower to the job can help achieve acceleration goals while reducing the issues of fatigue and the premium costs associated with overtime work. But increasing the number of workers does not come without its own set of problems; without proper supervision, overcrowding can threaten productivity if not dealt with carefully.
- *Prioritizing the critical path:* Isolating and identifying critical and 'near critical' activities in the recovery schedule allows project managers to ensure that acceleration costs are incurred for the most important elements of project success, and in turn, inefficient costs are kept to a minimum.
- *Streamlining the process:* In cases where the owner's policies and procedures are unnecessarily elaborate, project teams can help accelerate the process by identifying approval bottlenecks and restructuring internal controls.

WATCHING FOR 'IN FLIGHT' RISKS

While many available options for project acceleration seem straightforward from a theoretical perspective, the reality is that project acceleration often involves high stakes, large dollar commitments and immense pressure to minimize potential losses. Even after an appropriate acceleration option is implemented, risks can arise. Indeed, an agreement between the owner and contractor to accelerate the construction schedule does not mean that either party is entirely in the clear. But if both parties remain attentive to avoiding the pitfalls inherent in accelerating the work, many risks can be avoided or mitigated.

Our experience suggests that acceleration efforts tend to suffer from a number of common challenges during the acceleration period including:

- *Unexpected costs:* Even though higher labor costs should be expected during periods of accelerated performance, project costs can quickly snowball during protracted periods of acceleration. Weekend work, overtime, and extra crews all come at a steep premium.
- *Reduced workplace safety:* When additional crews are used to accelerate project performance, there are more opportunities for 'stacking of trades' causing unsafe working conditions.
- *Diminished quality:* Quality work results from a combination of trade skills, appropriate materials, and adequate time. With project acceleration's increased time pressures, project teams must manage work quality with greater care to mitigate the risk of added rework.
- *Low productivity:* Doubling crews and stacking trades on top of each other can result in declining labor productivity. Workers may find themselves standing idle for periods of time waiting for others to complete necessary work.
- *Resource burnout:* Asking contractors to work overtime and on weekends consecutively for several weeks may help recover lost time due to schedule delays, but if these efforts are extended continuously over the course of months, project teams will suffer from burnout, which will further exacerbate productivity and safety issues.

UNDERSTANDING THE IMPACTS

Today, infrastructure projects move at a record pace and the potential for cost growth due to schedule delays are innumerable. The effects of delays can be devastating if handled improperly. However, so too are the effects of a poorly executed acceleration strategy.

The bottom line is that accelerating a project to meet schedule constraints is a risky maneuver with no clear-cut path to success. That is why our member firms advise both contractors and owners to weigh all of the options carefully prior to engaging in project acceleration, while fully exploring the hazards associated with each. When used strategically, project acceleration can mean the difference between delivering an infrastructure project on time and missing the completion date by months or even years.

Control systems everywhere:
Maximizing opportunities through secure integration

By Cornelius Namiluko (@ni6x), & **Roy McNamara (@RoyMcNamara),** KPMG in the UK

Control systems are present in almost every infrastructure and industrial sector and are critical to the world as we know it. Yet as businesses become increasingly integrated , control systems designed to operate in isolation are now being connected into the virtual world, with production data flowing from inside and outside of the organization. As a result, the cyber risks – and opportunities – for infrastructure owners and operators are growing.

WHAT ARE CONTROL SYSTEMS?

Much like their name suggests, control systems are used – primarily in infrastructure and industrial settings – to control, monitor and/or supervise physical processes that extract, make or move the resources or products of the modern world.

Early control systems were mechanical or analogue which meant that they operated on fixed instructions wired into circuitry. With the emergence of open systems, computing devices started to be integrated into production and automation environments. As a result, processes that were once 'fixed' could be more easily updated, repurposed or redesigned which, in turn, led to higher scalability, reduced cost and improved efficiency.

CONTROLLING THE WORLD'S INFRASTRUCTURE

Control systems are found in any environment that requires the automation, control or monitoring of interactions with physical processes. As such, they form a critical part of the infrastructure management toolkit in areas such as

- Vessel automation – control systems provide remote supervisory control and ship monitoring systems
- Water treatment – operators use control systems to manage flow control and to monitor water levels and pump operations
- Power generation – control systems monitor and control the state of power plants and safety controls
- Building management – new control systems are being used in construction and to monitor the structural state
- Rail traffic management – control systems are central to monitoring railway tracks, controlling traffic flow and train speed
- Road traffic management – the controlling of traffic lights, toll bridges and billboards are increasingly managed by control systems.

LINKING UP THE CONTROL SYSTEMS

While control systems were originally designed to work in isolated environments and to be accessible only by well-qualified staff, the past few years have seen many of these systems start to be integrated into networks, the internet, or even the cloud in order to improve operational efficiency. Indeed, in a recent survey of IT/Engineering

managers, a third said that their control systems were already connected to their organization's networks, while 45 percent said they are now considering moving more of their control systems onto the network.[1]

And now, with the introduction of Big Data techniques, organizations are starting to look to their control systems to enable new business opportunities and insights.

CYBER SECURITY CHALLENGES

Control systems often pose unique security challenges. In some cases, they may be utilizing technology older than the internet itself. The reality is that, historically, most control systems were initially designed as specialized, isolated systems and were not built with cyber security in mind. In some infrastructure sectors, compromises could result in the loss of integrity and availability of the physical process; breaching statute in some sectors and reputational damage.

The new interconnectivity paradigm, however, means that attacks are already a reality. In 2014, ICS-Cert (a branch of the US Department of Homeland Security focused on cyber threats) reported a total of 245 incidents involving control systems, out of which 55 percent involved advanced persistent threats (APT) – sophisticated attacks typically directed at high value business and political targets; 42 percent of these targeted Communication, Water and Transport infrastructure.[2]

> Not surprisingly, many infrastructure owners and operators are now looking for improved ways of integrating their control systems while minimizing their cyber risk.

INTEGRATING CONTROL SYSTEMS AND MINIMIZING RISK

Not surprisingly, many infrastructure owners and operators are now looking for improved ways of integrating their control systems while minimizing their cyber risk. Some have tried performing unfocused security testing and patching for identified vulnerabilities, but most often find that this leads to unacceptable service disruptions. And few have the budget or the available capacity to fully replace their existing legacy systems.

Our experience suggests that the most robust solutions tend to follow an ongoing risk-driven approach. This allows operators and managers to balance disruption with the cyber risk while, at the same time, providing assurance that interconnectivity will not compromise core operational processes.

A key to success is to place appropriate focus on both the strategic and the tactical elements: the tactical elements are important as they often deliver cost saving and quick value-add; but the strategic elements are usually even more important as they help ensure that the benefits are sustained and return on investment justified.

OVERCOMING RISKS TO ACHIEVE OPPORTUNITIES

Control systems are everywhere. And their integration – coupled with improved data analytics capabilities – opens up numerous opportunities for infrastructure owners and operators to improve efficiency, enhance productivity and achieve substantial revenue generation and cost savings.

But with opportunity comes risk. In some sectors, a single control system failure or hack could cost lives. Infrastructure owners and operators would be well advised to think seriously about how they manage cyber security as they look to unlock new opportunities.

DRIVING VALUE FROM CONTROL SYSTEMS

Control systems are not just the passive police officers controlling static operational processes. They are also valuable tools to help infrastructure managers and owners improve their operational efficiency.

By integrating control systems with data analytics, asset owners and operators are finding that they can extract and analyze a massive amount of 'Big Data' from their systems to drive key insights to support:

- The operationalization of business processes (including the anticipation of potential systems failures or the adoption of new operational trends);
- The identification of new business opportunities (such as the opportunity to repurpose underutilized resources); and
- The achievement of operational cost savings through shared infrastructure and services.

In the UK, for example, significant resources are spent on monitoring the state, usage and maintenance of what is arguably the world's oldest and most heavily relied-upon rail networks. To improve their efficiency, Network Rail has formulated a 'Digital Railway' strategy that relies heavily on control systems. As well as capturing valuable real-time data on traffic and track conditions, Network Rail also plans to process their data to generate additional business insights and further improve efficiency.[3]

1 KPMG Survey on IT & OT Convergence, 2015
2 https://ics-cert.us-cert.gov/monitors/ICS-MM201502
3 http://www.railtechnologymagazine.com/Rail-News/network-rail-to-accelerate-digital-enablement-of-britains-railway

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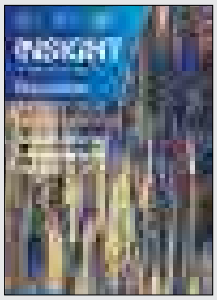
To access the publication listed here, visit: **www.kpmg.com/infrastructure** or email us at: **infrastructure@kpmg.com**

INSIGHT: THE GLOBAL INFRASTRUCTURE MAGAZINE

Insight is a semi-annual magazine that provides a broad scope of local, regional and global perspectives on many of the key issues facing today's infrastructure industry.



Issue No. 6 – Population

This edition of Insight takes a closer look at the link between unprecedented population changes and demographic shifts currently underway and the infrastructure needed to meet these challenges. It also includes a Special Report on Asia Pacific's infrastructure market.

Issue No. 5 – Resilience

This edition of Insight explores some of the world's most impactful stories of resilience. It also includes an exciting Spotlight Special Report on the important changes and opportunities within Latin America's infrastructure market.

Issue No. 4 – Megaprojects

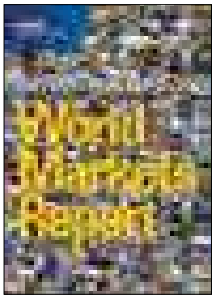
This edition of Insight magazine explores some of the key challenges and opportunities impacting megaproject delivery, and includes a Spotlight Special Report on Africa's infrastructure market, a key growth area.

Issue No. 3 – Infrastructure Investment: Bridging the Gap

This edition explores the complex world of infrastructure finance and funding, including critical topics ranging from direct investment, to innovative financing and funding models, and the evolving infrastructure fund market.

KPMG GLOBAL INFRASTRUCTURE PUBLICATIONS AND REPORTS

KPMG member firms are priviledged to be involved in many of the exciting changes that are happening in every corner of the world, across many sectors and at various stages of the lifecycle of infrastructure. We continuously seek to share the insights we are gaining in the process.

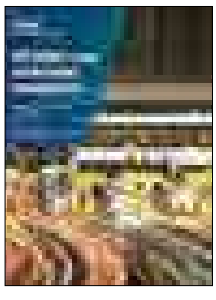


Infrastructure 100: World Markets Report

In the third Infrastructure 100, KPMG highlights key trends driving infrastructure investment around the world and a global panel of independent industry experts identify 100 of the world's most innovative, impactful infrastructure projects.

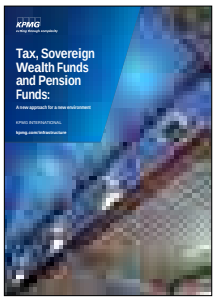
KPMG Toll Benchmarking Study 2015: An evolution in tolling

This study helps toll road owners, operators and governments compare key metrics such as cost to collect and operational efficiency. Based on in-depth survey data collected from more than 40 tolling agencies world-wide, it provides organizations with an unprecedented view into the challenges, risks, costs and opportunities facing the tolling sector today.



ISO 55001: A new era for asset management

This paper discusses the benefits of an integrated holistic approach to asset management, looks at the requirements of ISO 55001 and explains how companies comply with the standard and improve asset performance.

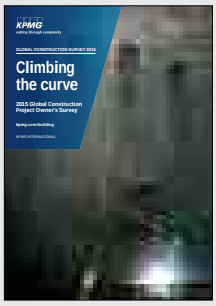


Tax, Sovereign Wealth Funds and Pension Funds: A new approach for a new environment

This report provides insights into how sovereign wealth funds and pension funds are approaching important market developments. It focuses on several critical topics including the shifting infrastructure investment market and evolving investment approaches.

GLOBAL CONSTRUCTION SURVEYS SERIES

KPMG conducts the Global Construction Survey to monitor Engineering & Construction issues and provide timely summaries and insights to help professionals make more informed business decisions in today's rapidly changing environment.

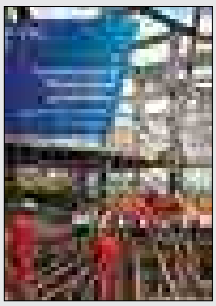


2015 Global Construction Survey: Climbing the curve

In the ninth edition, we focus on the challenges facing owners as they strive for a balance between power, responsibility and control. This report gauges the views of over 100 senior executives of leading private and public organizations from around the world.

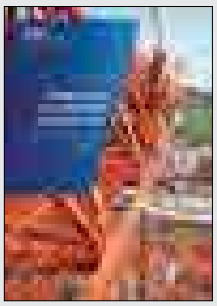
2013 Global Construction Survey:

The 2013 report catches the industry in a more upbeat mood after gauging the views of 165 senior executives of leading Engineering & Construction firms from around the world to determine industry trends and opportunities for growth.



2012 KPMG Global Construction Survey: The great global infrastructure opportunity

The 2012 survey focuses on the insatiable demand for energy and infrastructure in all forms, and the resulting fundamental shifts in focus for nearly all E&C firms.



2010 KPMG Global Construction Survey: Adapting to an uncertain environment

The 2010 survey highlights the cautiously optimistic outlook of many E&C companies about their immediate prospectus and discusses key industry issues and the measures adopted to seize the new opportunities identified.

FORESIGHT: A GLOBAL INFRASTRUCTURE PERSPECTIVE

In the complex world of infrastructure, hot topics of conversation and industry 'buzz' are constantly changing. *Foresight: A Global Infrastructure Perspective* is a series of articles that feature our take on some of the hot topics, trends and issues facing our firms' clients.

SPECIAL EDITION: Emerging Trends in 2015

Four of KPMG's Global Infrastructure leaders look back on predictions from 2014 and share their views on new trends that will change the world of infrastructure in 2015.

Levelling the playing field

Mauricio Endo reviews the implications and opportunities for local and international investors around Brazil's new US$64 billion infrastructure program.

Landmark PPP to reduce congestion in North Carolina, US

Matthew Gill discusses the innovative US$650 million initiative that enabled the state transportation authority to carry out much-needed enhancements to a major commuter route.

Unleashing Latin America's potential

Victor Esquivel reviews some of the topics discussed at the World Economic Forum in Mexico and addresses potential opportunities related to the countries ambitious reforms agenda.

India's 2015-2016 Budget: A kick-start for infrastructure

KPMG in India's infrastructure leaders review the country's budget and discuss its impact on investment and development in the infrastructure sector.

Vibrant Gujarat puts India back on the world stage

Arvind Mahajan reviews the opportunities and outcomes of the Vibrant Gujarat Summit, India's 'Davos of the East'.

Maintaining infrastructure investment in an era of tax morality

Dave Neuenhaus addresses the political concerns and tax implications of infrastructure investment.

Prioritizing transportation projects in an age of funding constraints

Clay Gilge and Stephen Andrews discuss how governments should evaluate and select the right capital projects using objective, data-driven procedures.

OTHER THOUGHT LEADERSHIP

KPMG's Infrastructure and Major Projects Advisory professionals conduct research and develop thought leadership for a variety of clients and industry leaders. This information focuses on current issues facing infrastructure owners and contractors in a rapidly changing construction environment, provides key insights and tangibily contributes to their decision making procesess.

Preventing black swans: Avoiding major project failure

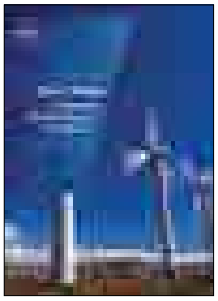
This paper highlights characteristics of major capital projects that can lead to catastrophic failure for owners and contractors, alternative approaches for screening projects, and red flags and triggers for early identification of troubled projects.

How to successfully manage your mega-project

Effective management of mega-projects relies on three key concepts: early planning and organizing, stakeholder communication and project controls integration, and continuous improvement. This three part series covers best practice for managing mega-projects.

Integrated project delivery: Managing risk and making it work for all parties

This paper provides an overview of the current practices and challenges involving IPD and its evolving risk profile. It also offers guidance on how to prepare an IPD strategy and describes the tools and methodologies currently used to facilitate successful IPD.



Next wave: Continuous monitoring and compliance

This report reviews the framework for developing a continuous project monitoring and compliance program that integrates the positive features of project performance monitoring, project risk and controls monitoring, and computer aided auditing.

MPA Project Leadership Series

KPMG's Major Projects Advisory (MPA) Project Leadership Series is targeted toward infrastructure owners with major construction programs, but its content is applicable to all entities or stakeholders involved with construction projects. This series describes a framework for managing and controlling large capital projects based on the experience of professionals from KPMG's MPA practice. Member firms provide services to hundreds of leading construction owners, and engineering, procurement and construction contractors.

- From Concept to Project – Critical Considerations for Project Development
- Stakeholder Management and Communication
- Project Organization & Establishing a Program Management Office
- Governance and Project Controls
- Budgeting, Estimating and Contingency Management
- Monitoring Capital Projects and Addressing Signs of Trouble
- Project Risk Management (future)
- Investing in Tools & Infrastructure (future)

KPMG'S GLOBAL INFRASTRUCTURE PRACTICE

INTEGRATED SERVICES | **IMPARTIAL ADVICE** | **INDUSTRY EXPERIENCE**

When it comes to infrastructure, KPMG member firms know what it takes to drive value. With extensive experience in most sectors and countries around the world, our Global Infrastructure professionals can provide insight and actionable advisory, tax, audit, accounting and compliance-related services to government organizations, infrastructure contractors, operators and investors.

We help clients to ask the right questions that reflect the challenges they are facing at any stage of the lifecycle of infrastructure assets or programs – from planning, strategy and construction through to operations and hand-back. At each stage, KPMG's Global Infrastructure professionals focus on cutting through the complexity of program development to help member firm clients realize the maximum value from their projects or programs.

Infrastructure will almost certainly be one of the most significant challenges facing the world over the coming decades. That is why KPMG's Global Infrastructure practice has built a team of highly-experienced professionals (many of whom have held senior infrastructure roles in government and the private sector) who work closely with member firm clients to share industry best practices and develop effective local strategies.

By combining valuable global insight with hands-on local experience, KPMG's Global Infrastructure practice understands the unique challenges facing different clients in different regions. And by bringing together numerous disciplines such as economics, engineering, project finance, project management, strategic consulting and tax and accounting, KPMG's Global Infrastructure professionals work to consistently provide integrated advice and effective results to help member firms' clients succeed.

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

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Take thinking to new heights

Infrastructure is one of the biggest and most complex challenges of the 21st century. An estimated US$57 trillion of investment will be needed by 2030 to sustain global growth. KPMG's Global Infrastructure practitioners, on site in 155 countries, advise governments, developers and investors across the lifecycle of projects – from strategy and financing to delivery and hand-back.

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cutting through complexity