

# INSIGHT

The global infrastructure magazine / Issue No. 2 / 2011

## Urbanization

The massive challenge facing cities and innovative ways it's being addressed

### Also in this issue:

- **Innovation in Cities**  
Mayors and City Executives around the world talk about how they keep cities livable and competitive
- **Decarbonizing Personal Urban Transport**  
Electric cars and the energy challenge for cities
- **Dr. Anne Kerr Talks Sustainable Cities**  
Water, energy and waste – Mott MacDonald's Director of Sustainability explains the dilemmas inherent in environmental urban planning



cutting through complexity



# Foreword

We believe that urban infrastructure is one of the most pressing challenges facing the world today. More than half the global population lives in cities, and this figure is set to rise to more than 70 percent before 2050 as a further 3 billion people move to urban areas in search of work and prosperity.

Around the world, in the face of rapid urbanization, cities are striving to provide effective transportation systems, reliable energy and water networks, and efficient social infrastructure to meet the changing demands of an aging population. City leaders must strive to deliver improved public services and modern infrastructure on an unprecedented scale against a backdrop of fast-changing technology, profound financial pressures and the need for greater energy efficiency. These challenges are being faced in a competitive and inter-connected global environment, where skilled resources are at a premium and the resilience of infrastructure is being tested severely.

At KPMG, we are privileged to have a global perspective on the work that urban administrations and national governments are doing to develop sustainable and achievable solutions to these challenges. We recognize the value of sharing insights and lessons to help cities develop a clear approach to urban infrastructure development.

This magazine embodies that spirit. We will hear from civic leaders around the world who share some of their insights and successes in urban infrastructure. Industry experts from across the KPMG network have also participated in this edition, providing practical advice and context on some of the biggest challenges facing cities in the near future.

We hope this magazine provides new ideas to the market and brings governments and urban planners a step closer to solving some of these pressing challenges. On behalf of the authors of this magazine, we encourage you to carry these ideas forward and welcome you to contact your local KPMG member firm to discuss any of the issues raised in greater depth.



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# Around the world in infrastructure

In **Canada**, Infrastructure Ontario and the Ministry of the Attorney General have reached financial close on the new USD335 million courthouse project in the city of St. Thomas. The new courthouse building will consolidate the city's two existing courts into a new multi-storey building to be completed in 2014. Another project in the province will develop a new building for three court locations in Belleville.

On the west coast of Canada, a new dam and hydroelectric project has been proposed for Site C on the Peace River in the Province of British Columbia. The USD7 billion program would provide enough clean, reliable and cost-effective electricity to power more than 450,000 homes per year.

## Canada



## UK



The Thames Tideway project is billed as the largest water infrastructure project in the **UK**. It will see the construction of two tunnels: the £600m Lee Tunnel which will capture 39 million tonnes of storm sewage each year; and the mammoth 32.2km long, nine meter wide Thames Tunnel running broadly aligned with the river. The Lee Tunnel is due for completion in 2014, while the Thames Tunnel is scheduled to finish in 2020.



## California

In early August the **California** High-Speed Rail Authority took a major step forward in implementing their high-speed rail vision with the release of a draft environmental impact report/statement for two key sections of the project. It is widely expected that the certification of these documents will make it possible to begin construction of the first section of the state's 800-mile system.



## Mexico

With strong local and Federal support, Multilogistica in **Mexico** is investing USD1 billion into a massive transport and logistics hub just outside of Mexico City. This is the first distribution infrastructure project in the region and will take 10 years to fully develop and will have the potential to incorporate development of rail connections, a dry port with customs facilities, and connections between the two existing ports at the site.



## Brazil

With the 2016 Olympic Games and 2014 FIFA World Cup fast approaching, **Brazil** recently kicked off a PPP project to build and operate Arena das Dunas Stadium in the World Cup FIFA Host City Natal. The USD260 million project will include the demolition of the existing facility and the construction of a new multipurpose arena with a capacity for 45,000 people. Another USD400 million will be spent to build a greenfield airport in Natal. The Sao Goncalo do Amarante airport is proposed as a 30-year build-operate-and-maintain concession that stands to set a benchmark for future concessions in the country.

## Zimbabwe



**Zimbabwe** Power Company is looking to raise capital for the expansion of Hwange and Kariba South power stations. In an effort to meet the country's growing electricity demand, the company intends to improve operational efficiencies at its existing power plants and invest in new generation capacity. The expansion of the sites are high priorities for the Government of Zimbabwe as well as for the Southern Africa Power Pool.

CANADA – St Thomas Courthouse: Infrastructure Ontario, News Release: Contract Awarded for St. Thomas Consolidated Courthouse Project, June 15 2011

Site C: BC Hydro, Province of British Columbia, About Site C Fact Sheet, Spring 2011

UK – Thames Tideway: Thames Water, Tideway Times, August 5, 2011

CALIFORNIA – California HSR: California High Speed Rail Authority, Draft Environmental Impact Report/Statements, August 9, 2011

MEXICO – Mexico Multilogistica: Mexico Now, Bringing Manufacturing Back Home, August 25, 2011

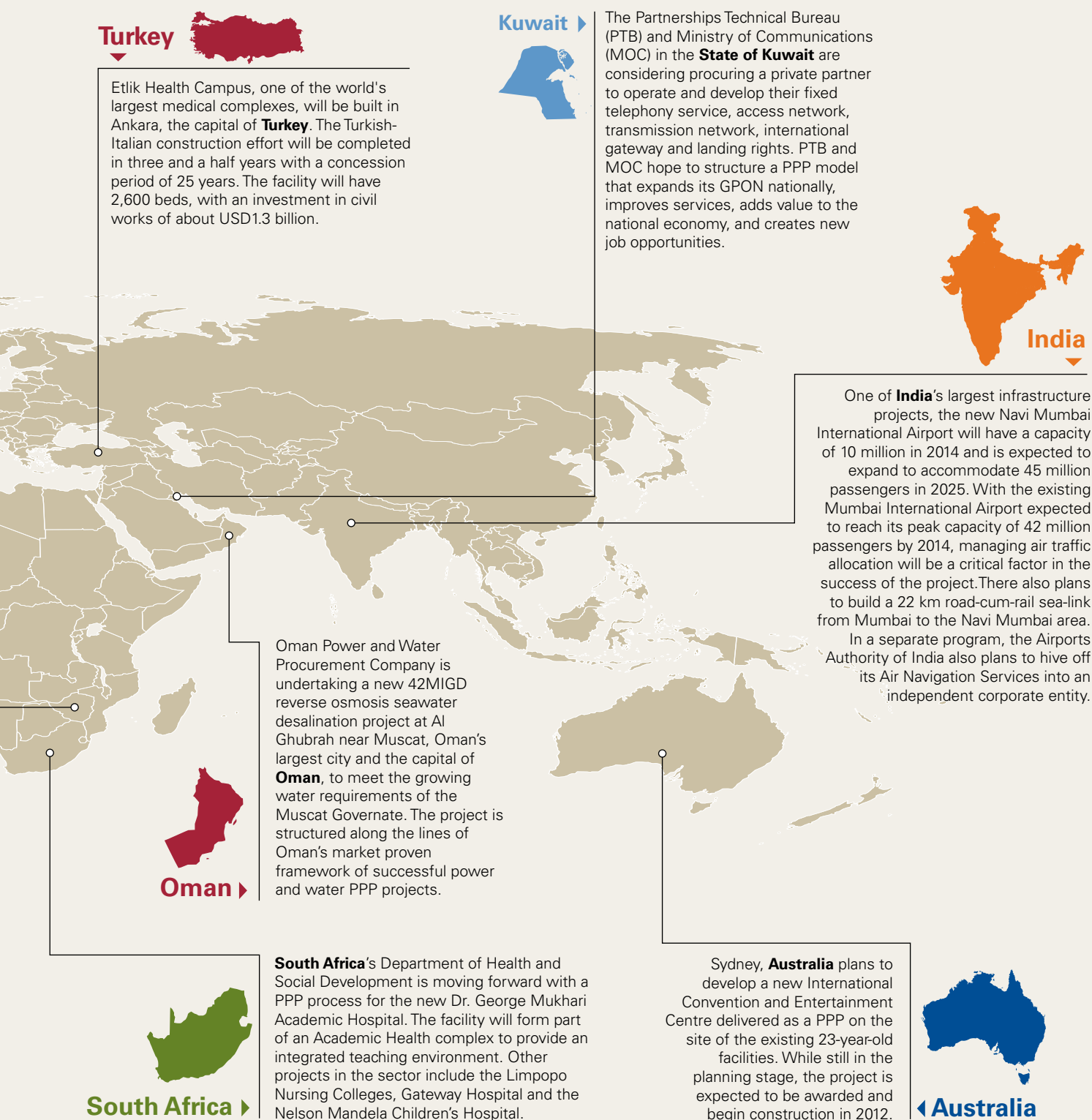
ZIMBABWE – Zimbabwe power projects: Zimbabwe Power Company, News Release: EIA Public Hearing - Kariba Expansion Project, July 26, 2011

Brazil FIFA: FIFA, News Release: Work continuing on Brazil 2014 stadiums, June 27, 2011

Brazil airport: Airport World, Consortium wins contract to build Brazil's first privatised airport, August 23, 2011

There's a lot going on in the world of infrastructure and KPMG's member firms are proud to be the advisors that many governments, private sector investors and developers turn to.

Ask our network of Global Infrastructure professionals to share their insights with you, either from the selection of projects shown here or one in your specific area of interest.



TURKEY – Asia Pulse, Erdogan talks on projects for Turkish capital of Ankara, May 25, 2011

KUWAIT – Kuwait Times, Arab Telecom and Internet Forum, June 5, 2011

OMAN – Muscat Daily, Ghubrah IWP construction qualification process opens, September 11, 2011

SOUTH AFRICA – IJ Online, Advisers in place for SA hospital PPP, May 9, 2011

INDIA – India Navi Mumbai Airport: Business Standard, Mega plan for Navi Mumbai airport, August 29, 2011

India Air Navigation Services: Business Standard, Air navigation service to be a new firm from Apr, August 5, 2011

Australia: NSW State Government, News Release: World Class Entertainment Heads to Sydney, July 8, 2011

# The Urban IMPERATIVE

By Nick Chism,  
KPMG's Global Head of Infrastructure, Partner in the UK

With more than half of all humanity now condensed in an area little more than two percent of the planet's land cover, urban infrastructure has become one of the world's greatest challenges.

In India alone, urban populations are expected to increase by at least

# 700 million

by 2050; the equivalent of about 500 new cities.

Over the past century, mankind has made a mad dash for the city: in 1900 only 13 percent of people lived in urban areas; today that number is 51 percent. And while North America and Europe were the focus of this historic growth, the balance has now shifted to the East. By 2050, the urban population is expected to jump by more than 3 billion souls, concentrated in Asia and Africa. In India alone, urban populations are expected to increase by at least 700 million, the equivalent of about 500 new cities.

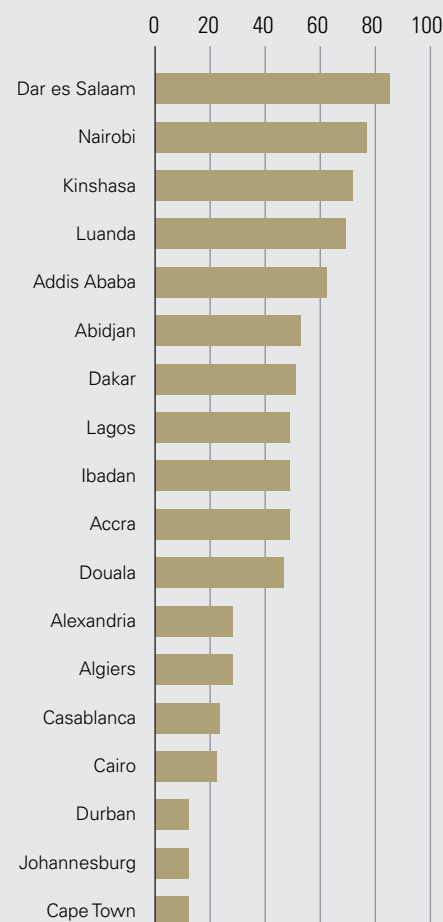
## Regeneration for the next generation

The demands on urban infrastructure have reached an unprecedented level. In both the developing world and the developed, existing urban infrastructure is in urgent need of revitalization. Much of the iconic infrastructure of mature global cities was first developed before 1900 (New York's Brooklyn Bridge, London's Underground, and Mumbai's Suburban Railway to name a few). Many rely on poorly designed or badly maintained facilities that are, in many cases, more of an impediment to growth than a catalyst.

Most pressing of all is the need for new infrastructure development to meet the basic needs of growing urban populations. Urbanization can be a catalyst for productivity, growth and technological advancement. But, without planning, it can create centres for deprivation, violence and disease.

## Growth of African cities

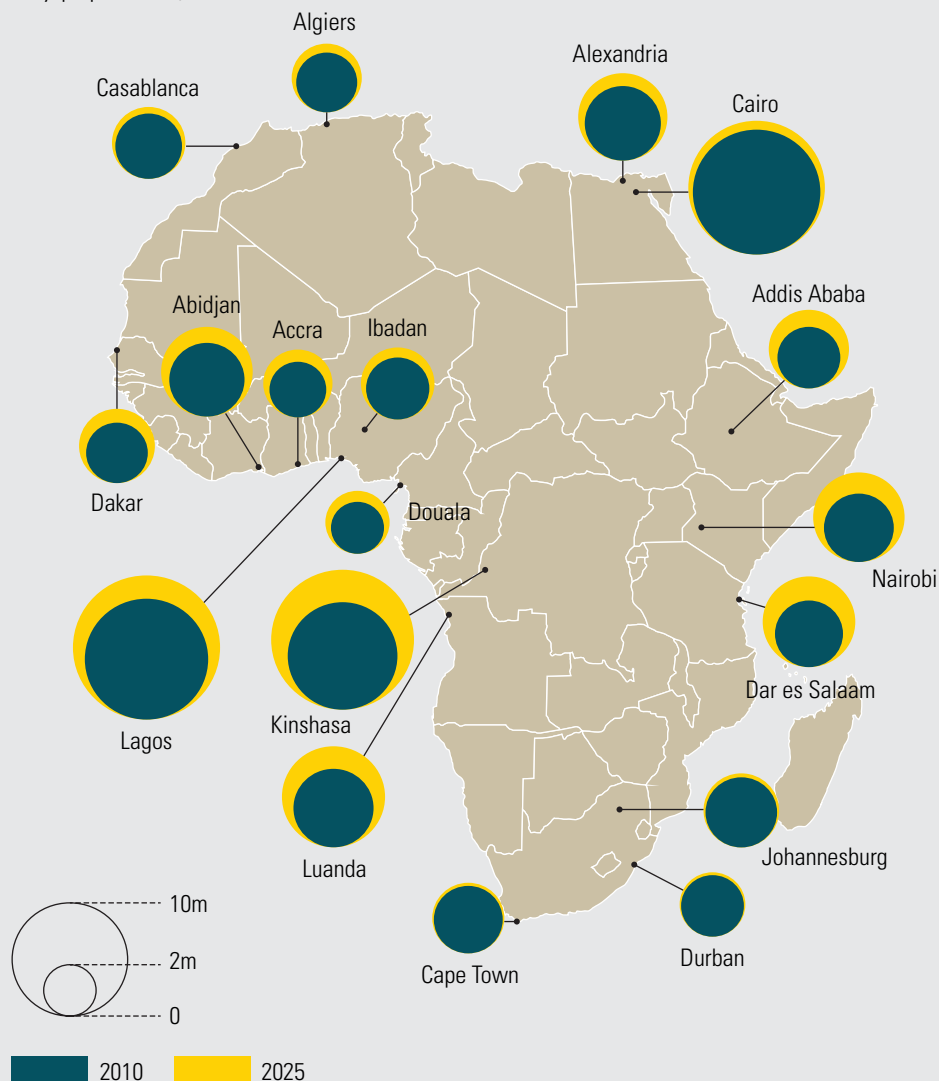
% increase, 2010–2025 forecast



Source: UN-HABITAT



City population, forecasts



### Managing the pace of change

Rapid urbanization isn't the only significant change facing urban infrastructure planners. Cities must adapt to new technologies that make transport and housing more energy efficient. In some cases, cities such as Bangalore or Masdar City will be built around new technologies; in other cases, cities built around existing industries, such as Detroit, must adapt to changing times.

The global attitude towards the environment has also changed dramatically over the past twenty years. Then, the United Nations was just convening its historic first conference on Climate Change in Rio de Janeiro and few – if any – households had ever even heard of a carbon footprint. Today, by some estimates, urban areas now emit more than 70 percent of the world's greenhouse gasses and – of that – residential houses and cars make up almost half. Cities now aspire to be more integrated, less car-dependent and more mass transit and pedestrian-friendly.

For today's governments and city planners, financial sustainability is every bit as important as environmental. Unprecedented levels of investment and maintenance spend must be planned and prioritized in the face of tightened budgets and limited resources. New models for delivering efficient outputs over the long term must be developed and evaluated, and their benefits must be sold to the public.

## Advancing through adversity

Against this bewildering backdrop of (often conflicting) priorities, many city leaders are finding creative ways to push ahead and – recognizing the clear economic, social and environmental benefits of urban infrastructure – are transforming their cities for the future.

Mumbai, for example, is not only forging ahead with an ambitious set of mass transit projects aimed at reducing congestion and carbon emissions, they have also incentivized the developers working on those projects to build tenement housing for some of the 60 percent of Mumbai residents that currently live in slums (see page 34 for more on this story).

For others, like the Knowledge Economic City in Saudi Arabia, a Greenfield situation provides a clean slate on which to build a new city that incorporates state-of-the-art facilities and smart technologies to both drive economic growth and raise the standard of living in the Kingdom (see page 20).

## Learning from others

But most importantly, cities and their leaders are increasingly willing to learn lessons from other jurisdictions and adopt best practices into their own urban areas. Canada's Bus Rapid Transit system, Singapore's water conservation policies, European-styled bicycle paths and many other urban

innovations are quickly being adopted, adapted and implemented in cities half-way around the world.

This type of collaboration will become increasingly important to city leaders. Infrastructure is – on the whole – incredibly expensive to design, build and operate and cities can't afford to get it wrong. Smart grids are a case in point: today, many jurisdictions are seeking to simultaneously reduce power consumption and manage their electricity grid while keeping costs affordable to consumers. And while every city faces unique power challenges of their own, some are finding that results from existing projects around the world help new projects anticipate and manage challenges that derailed their peers in other regions.

Clearly, every city is unique and must respond to the specific challenges of their particular situation. Some cities may be too small or too thinly developed to warrant a mass transit system. Others (like London, New York and Hong Kong) already possess highly efficient transit and must look to other means to reduce congestion and carbon emissions while still enhancing the quality of life for urban dwellers.

But to balance the demands of a growing urban population, tightening financial resources and increasing

concern over the natural environment, greater collaboration will be required. Today's city leaders face a massive task, but they do not face it alone. The C40 project (see page 56) is a case in point: brought together by the common objective of reducing urban carbon emissions, the group of large global cities works closely with national governments, private enterprises and non-governmental organizations to develop approaches and initiatives to not only share best practices, but combine as a strong voice to encourage other cities to follow in their footsteps.

It will take more initiatives like these – and a significant amount of political support – to start to change the current dynamics of urban infrastructure. But change we must. There really is no alternative.

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**Today's city leaders face a massive task, but they do not face it alone.**

# Urbanization



If you thought our cities were crowded today, just wait twenty years. Between now and 2030, more than 180,000 people will migrate into urban areas each day; that's 5.5 million people per month, roughly the size of Singapore or Denmark.

It won't be an easy process for anyone involved. In most cases, new urban migrants will find themselves entering cities that are already struggling with high levels of unemployment, decaying infrastructure and a lack of affordable housing. If things continue on their current trajectory, the vast majority can expect to end up in slums, toiling as unskilled labor or in the informal economy.

City governments should be concerned. Massive urban migration will put incredible pressure on city services, economies and infrastructure. Even assuming jobs and affordable housing can be found for all of the new urbanites (and that is highly improbable), city planners will need to fundamentally rethink their approach to urban infrastructure.

It is not a case of simply laying down more tarmac and pumping more water. Land is at a premium, water is increasingly scarce and – likely the most limiting factor – finances are tight. Indeed, barring a miraculous recovery of national economies over the

next decade, most cities are facing an infrastructure funding shortfall in the billions of dollars.

The traditional approach to urban infrastructure must change. Part of this burden will be on urban planners and infrastructure developers who will need to facilitate growth within the context of their local environment and specific financial situation. Politicians will also have a role to play by creating policies that encourage private investment and set a vision for the future. Even individual citizens will be central to achieving urban infrastructure goals if the right incentives for conservation can be identified.

However, the challenges of urbanization cannot be left to city governments to sort out alone. Urbanization is a national issue and demands a national strategy. Funding is certainly one area that will require inter-governmental cooperation, but so will conservation, the creation of national standards, health and welfare, and a host of other issues that are critical to the national agenda.

Clearly, there are still a number of significant challenges that must be solved before cities can lay out the welcome mat to the masses of new urban hopefuls.

# Congestion

Road congestion is hugely expensive. In 'opportunity cost' alone, the numbers are staggering: by 2025 the UK is expected to lose USD36 billion each year<sup>1</sup> due to traffic jams; the US already loses almost twice that.

Reducing congestion is important for a number of other reasons. A clear winner would be the environment, benefiting from fewer cars idling on roadways and faster travel times which should result in lower fuel consumption and carbon emissions. Traffic congestion also impacts the quality of life for those living or working in the city. It is one of the few issues that the world's population can gripe about in harmony; few urbanites boast about the quality of their roads, most outright decry them.

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**A clear winner would be the environment, benefiting from fewer cars idling on roadways and faster travel times which should result in lower fuel consumption and carbon emissions.**

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All of this has led many urban areas to focus on renewing their development of mass transit systems. Indeed, there has been a flurry of activity in major urban areas around the world, as we see from the work recently completed or currently underway in Vancouver, Rio de Janeiro, Singapore, Mumbai and Brisbane (see our City Leaders section).

Many cities are also implementing road-use fees as a way to cut vehicle use in highly congested areas. London's system is likely the most famous, but similar programs exist in countries like Norway and Singapore, and are a perennial topic of conversation in New York. A number of jurisdictions are also testing new approaches to road-use fees. In Rotterdam, for example, the government is turning congestion fees on their head by paying drivers to stay off the road, rather than taxing them for being on it (see page 28).

Governments looking for a comprehensive approach to reducing congestion will want to examine the programs in Singapore (see page 48). By combining clear policy on development objectives, tight restrictions on car ownership, valuable incentives for reducing road use and significant investments in mass transit, the city-state has effectively eliminated congestion altogether. Given that Singapore has the second highest population density of any urban area, that is quite an achievement.



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<sup>1</sup> The Eddington Transport Study, UK Department for Transport, December 2006

# Energy

Not since Thomas Edison invented the light bulb has the power industry seen so much innovation and change. On all sides – upstream, downstream and distribution – new technologies and environmental policies are changing the very fundamentals of the way we use and generate power.

Smart meters – and the smart grids they will eventually enable – will not only alter consumption patterns, they will also allow power generators to balance out their capacity peaks (see page 24). New forms of renewable generation capacity are rapidly coming to market, offering a real opportunity for governments to both reduce carbon emissions and (for many countries) develop a secure and sustainable power supply. And already the move towards electric cars and urban transportation is starting to add new demand to the grid (see page 50).

But while all of this seems like cause to celebrate, it may be a bit early to pop the Champagne. Take smart meters for example: many countries are doing a rather good job at installing little boxes in every home, but few have mastered the skill of using the resulting data to make the grid more efficient.

The jury is still out on renewable energy, too. Stripped away of all the national subsidies and tax incentives that currently make many technologies economically viable, most renewable sources tend to be somewhat expensive when compared to other generation options, and often deliver unreliable base loads to the grid. Governments will need to work closely with power generators and distributors to find effective ways to incorporate renewable sources without inflating consumer prices.

And while the widespread adoption of electric vehicles would seem – on the surface – to be an obvious win for the environment, countries that rely on coal-fed plants will be doing little more than downloading the carbon footprint onto their generators.

That said, this publication firmly believes that energy policy, generation and consumption must change if the world is to successfully balance economic growth against environmental survival. Smart meters are the first step to achieving efficiency; renewable energy subsidies are sorely needed to nurture a new industry; electric vehicles will reduce carbon emissions.

But we also believe that none of these innovations will achieve their full potential without a fundamental reformation of the power industry. That may be the most difficult challenge of them all.



**Smart meters are the first step to achieving efficiency; renewable energy subsidies are sorely needed to nurture a new industry; electric vehicles will reduce carbon emissions.**

# Vancouver accomplishes an Olympic infrastructure feat

By Joel Finlay,  
KPMG in Canada



Few things catalyze urban infrastructure like hosting a major sporting event. For Vancouver, the hosts of the 2010 Winter Olympic Games, the massive event provided not only an opportunity to show off their city and province to millions of spectators around the world, but also to fundamentally transform their urban infrastructure to meet the needs of future generations.

## Avoiding elephants

Talk to any host city about sport-related infrastructure and you can be sure that the term ‘White Elephant’ will come up. They are every government’s nightmare: huge, expensive or unnecessary infrastructure builds that – after the big event – are left to rot and decay through disuse. Horror stories abound: stadiums built to such a singular purpose that they are useless to the communities in which they remain; four lane highways to tiny hilltop villages; high speed rails with no passenger demand.

“We made sure we approached infrastructure development by looking at the long-term use over its lifecycle and how it would be used by the community,” noted Dr. Penny Ballem, City Manager for the City of Vancouver. “If you just build infrastructure to meet the needs of the games without

## AN INTERVIEW WITH

### Dr. Penny Ballem

City Manager for the City of Vancouver



*We focused on creating a critical mass of public spaces like the Waterfront area and around the Convention Center, and these spaces are now in use almost every weekend.*

– Dr. Penny Ballem



thinking about where the community is going and what its needs will be, you'll never be able to optimize your investment, even over the 60 or 80 years that the asset will exist."

#### Creating long-term value

As a result of this long-term thinking, Vancouver is already seeing great value from their games-related infrastructure. But beyond the world-class sporting venues and conference centers, the city also approached infrastructure projects as a way to revitalize the downtown core. For example, the Canada Line (a rapid transit service) was not only an integral part of the games-related transportation plan, it also allowed the city to reformat the public spaces in the downtown core and 'activate' key streets. The line also enabled a significant 'mode-shift' as citizens gained greater access to public transit and bicycle paths. As a case in point, the Canada Line was originally expected to see 100,000 rides per day by 2013, a milestone that it proudly passed in March 2010.

"The games really changed the way we use and interact with our city," noted Dr. Ballem. "We focused on creating a critical mass of public spaces like the Waterfront area and around the Convention Center, and these spaces are now in use almost every weekend."

#### Participatory planning

Key to the success of both the games and the related infrastructure development was the city's ability to bring a wide variety of stakeholders into the planning and development process. "These are big and complicated events to pull off so it was crucial that we understood all of the partners that would need to be involved, and worked with them to develop our plans and communicate our vision," added Dr. Ballem.

These relationships continue to pay off. Vancouver's city administration is now much more integrated and collaborative across departments, which has enabled the city to rapidly move projects ahead and reduce duplication. But just as important has been the relationship that the city has forged with other levels of governments, local businesses and the citizens themselves that has – in turn – changed the very culture of the city.

# Rio prepares to host the world

By Manuel Fernandes,  
KPMG in Brazil

“What makes Rio so special is our natural resources – the sea, the beaches, the lakes and lagoons, the mountains, our urban forest – and we have a great responsibility to take care of these environmental assets,”

– Carlos Roberto Osorio



The eyes of the world are on Rio de Janeiro. The city already boasts the highest GDP in Brazil (which itself is experiencing enthusiastic attention as a BRIC country) and is widely seen as the economic powerhouse of Latin America.

Rio is also receiving particular attention as the host city for three of the world's biggest events to be held over the next five years: the 2012 UN Summit on Climate Change, the 2014 FIFA World Cup and the 2016 Summer Olympics. Each of these will require a massive investment in infrastructure.

## AN INTERVIEW WITH

### Carlos Roberto Osorio

Secretary of Conservation & Public  
Services for Rio de Janeiro

 *By recognizing the need to restructure our finances, debt and administration, we were able to become more efficient and put more money towards investments.*  – Carlos Roberto Osorio



### Striking a new path

Until recently, Rio's reputation for infrastructure maintenance and development was far from stellar. "After the Capital City was moved from Rio to Brasilia in 1960, investment in infrastructure declined and many of the necessary developments failed to take off," admitted Carlos Roberto Osorio, Rio's Secretary of Conservation & Public Services.

Today, however, Rio is virtually buzzing with new infrastructure activity. In transit alone, the city has four major projects on the go which – combined – will transform the way people move to and around the city: the federal expansion of Rio's airport to add new capacity; the addition of a new subway line to link the city center to the future Olympic venues; the complete overhaul of the suburban rail network to add new rolling stock, switching and command facilities; and the development of four new Bus Rapid Transit routes through the city.

"We are experiencing a very special time in the development of Rio," said Mr. Osorio. "It's a total transformation and urban infrastructure is playing a key role in this metamorphosis over the medium and short term."

### Caring for the environment

City administrators are also putting particular focus on environmental sustainability. Rio hosted the UN's first summit on climate change in 1992 and now – on the twentieth anniversary of that event – will welcome delegates back to evaluate the world's progress over the past twenty years. But for Rio, environmental sustainability is about more than brandishing credentials. "What makes Rio so special is our natural resources – the sea, the beaches, the

lakes and lagoons, the mountains, our urban forest – and we have a great responsibility to take care of these environmental assets," added Mr. Osorio.

### Putting the house in order

But it is Rio's progress in the funding and financing of urban infrastructure projects that has been the biggest catalyst for change. Over the past three years, both the city and state governments have aggressively tackled their finances and debt to achieve investment-grade ratings from global credit agencies. This has enabled the city to not only tap into new sources of financing, but has also raised Rio's appeal as a destination for foreign investment.

The city has also put an emphasis on encouraging Public Private Partnerships (PPP) to develop urban infrastructure projects. As a case in point, Mr. Osorio points to the country's largest PPP program, a USD5 billion redevelopment of Rio's port area currently underway as a partnership between private enterprise and the municipality. But there are plenty of other great examples: the Olympic Village and Park will be an entirely private venture and much of the new transit system is being developed under PPP models.

Rio's civic leaders credit much of their recent success to changes in the way government approaches infrastructure development. "By recognizing the need to restructure our finances, debt and administration, we were able to become more efficient and put more money towards investments," added Mr. Osorio. "It took a strong action plan and determination, but now we are reaping the rewards of that strategy."

High-growth markets tend to produce high-growth cities. Indeed, many of the emerging markets owe much of their stellar growth trajectory to the power of cities such as Mumbai and Sao Paulo. But with rapid urbanization and increased economic activity, the need to invest in urban infrastructure to maintain economic growth has become increasingly important.

# Developing infrastructure in urban growth markets

By Darryl Murphy, KPMG in the UK

For the vast majority of high-growth cities, the principle of infrastructure often comes down to the ability to pay. But here – as anywhere – the reality is that funding can only effectively come from three sources; government taxation or levies, real estate and user-pay mechanisms.

## **Making the most of private investment**

Given that many national budgets remain stretched as a result of the global financial crisis, the conditions seem ripe for the wider introduction of Public Private Partnership (PPP) structures using private finance.

Motivations for using PPP vary across markets. In developed markets, infrastructure financing has generally evolved towards government payment streams for the availability of services provided by the private sector under a PPP. But in many of the emerging markets, such as India and Brazil, the inclination is to use PPP for economic infrastructure that generates cash flows directly from the users (such as toll roads, electricity generation, and water supply).

## **PPPs in emerging markets**

And while these models are attractive to governments seeking to minimize their upfront capital investment, the success of PPP structures in high-growth markets often comes down to fully understanding the ramifications of these structures on governments, sponsors and users. For example:

- **Cost of capital** – In many emerging markets, the interest rates for project sponsors are typically much higher than the record lows currently being enjoyed in Europe and the US. And with Brazil and India's cost of borrowing for the private sector at 11.5–12.5 percent, the total cost of capital for projects in these regions is therefore high, which inevitably leads to higher tariff pressures on consumers.
- **Inflation** – High-growth markets tend to suffer from high levels of inflation (9 percent for India and 6.5 percent for Brazil). As a result, there is often a significant impact on the underlying cost of the goods and services required under the PPP agreement, which may again lead to increased pressure on tariffs.

- **Currency risk** – For many infrastructure projects (such as roads) revenues and expenditures are typically accounted for in local currency which, in turn, requires debt and equity to be raised in local currencies as well. But local banks are often inexperienced and lack access to capital market options leading to short-to-medium term debt (up to 15 years) that carries limited effective risk transfer. However, there are many salutary cases to illustrate the risk of this approach, and the ability to pass on this risk to users should be carefully considered.
- **Demand risk** – Implicit government support may be required to mitigate demand risk in the early years of a project, or to support project termination payments. Particularly for governments, there is a critical need to appropriately recognize any contingent liabilities under these contracts.

Developing successful PPP structures in emerging and high-growth markets requires both governments and sponsors to be realistic about the specific risk allocations for PPP projects, and to carefully assess the ability of projects to be free-standing economically. Getting this right will almost certainly be the key to unlocking affordable and sustainable infrastructure funding that – ultimately – will enable high-growth markets to maintain their current trajectory.

**For the vast majority of these high-growth cities, the principle of infrastructure often comes down to the ability to pay.**

# Incentivizing infrastructure investment in

# Brazil

By Roberto Haddad, KPMG in Brazil

As one of the world's fastest-growing economies, Brazil has an urgent need for increased investment in infrastructure. Recognizing this, the government has created a range of incentives to encourage foreign investment, which should allow the country to pursue its infrastructure objectives while keeping other economic and financial challenges in balance.

## The infrastructure dilemma

The requirement for infrastructure investment in Brazil is pressing, especially in the country's transport sector. Massive geographical challenges have often led to major regional differences and – in some cases – the under-development of key assets such as the rail network. What's more, Brazil is to host the football World Cup in 2014 and the Olympic Games in 2016, both of which will require major investment in the country's infrastructure. It has been estimated that Rio de Janeiro alone needs USD36 billion of investment, just to prepare for these two events (for more on Rio de Janeiro's infrastructure development plans, see the related story on page 14).

To help resolve the dilemma, the new government of President Dilma Rousseff is beginning to reverse traditional Brazilian opposition to private infrastructure investment and a number of public-private agreements are being developed. Also, a series of measures have been designed to attract foreign investment into the corporate bond market.

## Incentives for foreign investments

Brazil offers a number of fiscal incentives for inward investment in private equity funds (Fundos de Investimento em Participações – FIPs), most of which apply to infrastructure investments. Two of the most significant aspects for overseas investors in FIPs are that income and capital gains received by the funds are usually not subject to taxation in Brazil, and that there is no withholding tax on disposal of FIP quotas for non-residents (as long as they are not located in a low tax jurisdiction and each investor has no more than 40 percent of participation in the fund).

And while a new Provisional Measure (517/2010) was enacted to grant specific tax incentives on infrastructure investments made by Brazilian individuals and entities, non-residents may benefit from a zero-rated withholding income tax on income received from investment funds with at least 85 percent of their equity invested in debentures issued by entities involved in infrastructure projects.

Furthermore, a special tax regime (Regime Especial de Incentivo para o Desenvolvimento da Infraestrutura – REIDI) was specifically created to stimulate investment in infrastructure. REIDI grants a suspension of the social contributions for entities involved in infrastructure projects in a number of sectors including transportation, ports, energy, sanitation, irrigation and the construction of ducts.

## Continued growth, continued investment

The IMF recently stated that Brazil had recovered from the global crisis sooner and faster than most other economies, and endorsed the government's development strategy, with its emphasis on increasing investment, both public and private, especially in infrastructure projects.

Actually, Brazil had already registered a full year of strong growth in 2010: the economy grew at 7.5 percent, largely on the strength of domestic demand. And now with a range of investment incentives available, Brazil should be able to ensure that foreign investment plays an increasingly significant role in improving the country's infrastructure.



# KEC Madinah: transforming a holy city into a knowledge economy

By Jonathan Barnes,  
KPMG in Saudi Arabia

**Building a city from scratch is no easy task, particularly when that city is nestled within one of the Muslim world's most holy sites and oldest cities.**

## AN INTERVIEW WITH

### Dr. Sami Baroum

Chairman of Saudi Arabia's Knowledge  
Economic City Development Company



*"We recognize the  
importance of these services and  
facilities as value-creators for a  
new city,"*



– Dr. Sami Baroum



For officials at Saudi Arabia's Knowledge Economic City (KEC) in Madinah (the home of the Prophet Muhammad and site where the Qur'an was compiled), proximity to the Holy Mosque brings more opportunities than challenges. The project is primarily intended to attract knowledge-based industries to the Kingdom through a mixture of high-quality technology infrastructure and supportive regulation. But the site also sits on the main route between the city's airport (soon to be expanded into an International facility) and the Holy Mosque just five kilometers from the western edge of the complex. As such, KEC expects to become a major transit route for many of the pilgrims that come through the city, and an attractive location for Islamic businesses and professionals.

#### Developing connections

One of the biggest challenges facing the KEC planners is how to develop a world-class IT infrastructure and utilities system within an existing grid with established infrastructure. For this, KEC has partnered with the major utility providers to provide trunk connections between the site and the city network.

They are also working closely with Madinah authorities to develop projects that drive value for the region, such as a mass transit system that connects KEC, the airport, the old city and the new train station (which itself links Jeddah, Mecca and Madinah). "By taking this approach, we also enhance service to areas surrounding KEC," added Dr. Sami Baroum, Chairman of KEC. "So we are helping both the city and the utilities to reduce the investment needed to service the wider city at the same time as helping them connect world-class infrastructure for KEC."

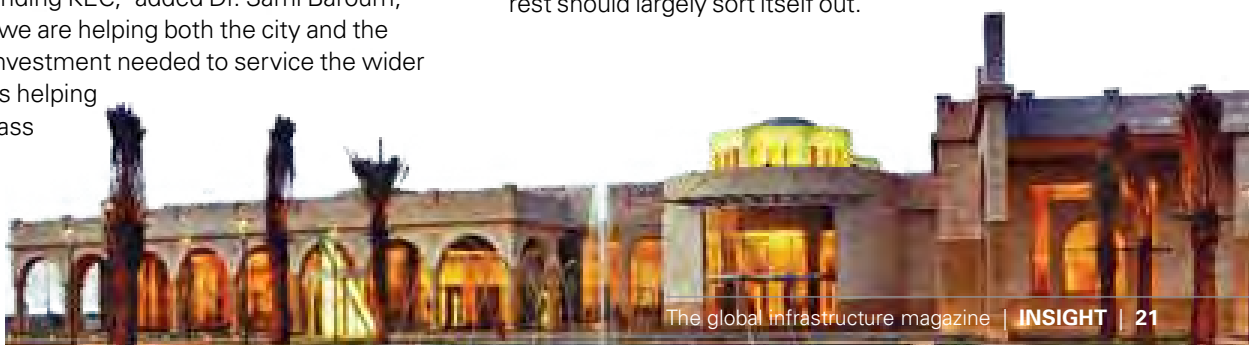
#### Maintaining competitive advantage

Building a new city from the ground up requires Dr. Baroum's team to carefully prioritize their infrastructure development, particularly for technology. This means not only selecting the best combination of projects to encourage development and increase land values, but also approaching development in a modular fashion to ensure that new technologies and innovations can be embedded in future phases to help the city keep pace with technological change.

The company is also taking a pragmatic approach to attracting investors. For example, the team has examined the future social infrastructure needs of the city (such as schools, hospitals and museums), and has developed unique partnerships to encourage investment in sectors normally seen as a loss leader. "We recognize the importance of these services and facilities as value-creators for a new city," notes Dr. Baroum. "So we are putting a lot of effort towards developing the investment proposition by donating land, developing operating models and drawing up business cases."

#### Sharp focus on the goal

But most importantly, the team is making all of their decisions from the point of view of what will ultimately provide the most value to the tenants and developers of the Knowledge Economic City itself. "Providing an environment that supports knowledge-based industries is the central focus of our efforts," added Dr. Baroum. "So we decided early on that we are not in business to develop villas, retail shops and hotels, but rather to focus on the underlying technology and infrastructure that will make the city a more attractive place to invest. If we can achieve that, then the rest should largely sort itself out."



# Building Special Economic Zones

By Satya Ramamurthy, KPMG in Singapore



Special Economic Zones have become the darling of the developing world. Across Asia, the Middle East – and now increasingly in Africa – these engines of economic growth have been springing up to catalyze national economies and drive social change.

The argument for Special Economic Zones (or SEZs) is hard to refute. Singapore's meteoric development was built on the back of SEZs. Today, China and India, the two global powerhouses of the emerging markets, are making them a cornerstone of their growth agenda.

## Not a simple recipe

But developing a successful SEZ can be significant challenge for national governments. For one, SEZs generally require a unique policy framework that encourages investment and removes barriers to growth. India's 'basket' of incentives includes the duty free import of goods for development, 100 percent Income Tax exemption for some businesses and a 'single window' clearance process for Central and State level approvals. In other jurisdictions, policy frameworks also include relaxed tariffs, fast-tracked immigration and financial guarantees.

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This leads to the second major challenge for governments: demonstrating value and competitive advantage. Governments and SEZ planners must be able to articulate a strong value proposition to potential investors. Often, this centers on proximity to either raw materials or market access points that can deliver a clear competitive advantage.

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**Petrochemicals, for example, require large ports, railheads and lots of power. Technology-focused SEZs will want to prioritize communications networks and airports.**

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But equally important is what is offered within the ecosystem itself: a secure and low-cost supply of power, effective waste management, and reliable water supplies to name just a few.

Which, of course, leads us to infrastructure; the third major challenge for SEZs. Obviously, these ecosystems require efficient, effective and sustainable infrastructure that matches the unique needs of the industrial sector that they plan to attract. Petrochemicals, for example, require large ports, railheads and lots of power. Technology-focused SEZs will want to prioritize communications networks and airports.

**Managing the demand risk**

But matching up industries to infrastructure is relatively straightforward stuff. The real challenges come in delivering that infrastructure in a well-planned, carefully integrated and financially sustainable way.

Probably the biggest complexity facing governments comes down to demand risk. SEZs require a massive amount of base infrastructure to be developed, and often before a single tenant even moves in. This not only means a tremendous outlay of capital to finance, but also a long-term outlook and innovative approach to managing risk.

Particularly in the case of 'Greenfield' developments, governments may inevitably need to underwrite a level of risk in order to successfully deliver the basic underlying infrastructure necessary to support industry. In some cases, governments may consider creating a special-purpose fund that can act as a government guarantee against these risks.

SEZs are also significantly different from conventional city infrastructure developments in that they require a high degree of integration and vision

to successfully deliver. Whereas urban infrastructure generally deploys in a very 'siloed' fashion (where different government departments hold responsibility for different parts of the urban infrastructure puzzle), SEZs can only be successful when overlaid against a Master Plan and delivered along a strict timeline.

**The role of private investment**

While governments will undoubtedly need to take on some of the financing and oversight, there is still a significant role for private enterprise in the development of infrastructure. In this, however, governments and SEZ planners will need to be pragmatic. Certain areas of infrastructure development can realistically be transferred to the private sector (such as ports, telecommunications and even the day-to-day operations and management of the SEZ). Others will often stay the remit of government – either because returns can be slow to generate (as with basic underlying systems), or because of political sensitivities (such as land acquisitions).

That said, there have been a number of examples of 'Private SEZ' developments throughout the world that have met varying degrees of success. But some have also been severely hampered by a perceived mismatch between government policy and private objectives. And since SEZs rely on incentives such as special tariffs, streamlined regulations and access to markets these disconnects can very quickly stall or derail promising developments.

If these challenges can be mitigated, then governments should find that Public Private Partnership models provide a number of benefits; not only as a method for mitigating risk and reducing cost, but also as a way to tap into sources of expertise, technical know-how and structures that can help bring new ideas and approaches to SEZ development.

**Exporting SEZs to the Western World**

Following the global financial crisis, many western governments may be seriously considering the benefits of SEZs in their own countries. The crisis quickly demonstrated the acute need for some economies to diversify beyond their traditional industries and to put a greater focus on competing on the world stage for Foreign Direct Investment.

And while the value proposition for an SEZ in the US will be very different from one in China (which leverages low-wage and low-cost resources), governments in the western world still have a number of levers that can deliver significant incentives to foreign companies.

Western governments may want to look to Poland for inspiration. The only EU country to successfully deliver a SEZ, the country now has fourteen that span a number of industrial sectors. Interestingly, Poland was the only EU country to avoid a decline in GDP during the recent recession (in fact, it had the highest GDP growth in the EU in 2009) and is considered to be one of the healthiest economies to come out of the post-communist block.



# Unlocking the power of smart metering

By Mark Powell, KPMG in the UK



Will Smart Meters save the world from environmental disaster? Not likely. But they will set off the revolution.

The truth is that Smart Meters are actually not as smart as people would like to think. In reality, today's Smart Meters do little more than provide really granular data on energy use (although, from a distribution perspective, they also reduce the company's cost-to-serve and bill settlement processes).

And there is lots of evidence that shows that measurement alone is actually a very weak motivator for behavioral change, particularly the kind of change that will need to happen if the world hopes to meet global carbon reduction targets.

Money, on the other hand, has always been a very strong motivator (that is, as long as the money keeps flowing). Some jurisdictions are already moving their rate systems towards a time-of-day billing scheme that rewards customers for shifting their power use to 'off-peak' hours. And while this will certainly help to balance out the energy

grid, it does not actually reduce energy consumption. Achieving that will take a much more complicated change.

## **Not another technology install**

To start, governments and power companies will need to evolve the way they think about their Smart Metering program. All too often, Smart Meter programs are seen as a simple technology project (installing millions of new meters and hooking them into the network), rather than a way to fundamentally transform the energy market.

In fact, the really exciting thing about Smart Meters isn't the meters themselves; it is what they will enable: the Smart Grid. In a Smart Grid, the meters don't just collect and communicate data on customer usage and times. They also let distributors – and even upstream generators – track overall grid capacity and network

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**This will help power authorities to not only integrate new power sources (such as wind and solar) into the system, but also reduce their long-term infrastructure build costs.**

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activity. This will help power authorities to not only integrate new power sources (such as wind and solar) into the system, but also reduce their long-term infrastructure build costs. And at the end of the day, both of these outcomes have the potential to enable significant carbon reduction.

But this will take a significant change in national energy strategies. One of the biggest challenges involves ownership. Somewhat counter-intuitively, most governments have put the task of rolling out Smart Meter programs on the distributors themselves. And since most incumbent power companies earn their revenue from running high volumes on existing infrastructure, they may not immediately see the benefit of spending lots of capital – particularly upfront – on a system designed to reduce volumes. As a result, many Smart Meter programs are making slow progress.



### No clear path to enlightenment

Smart Meter programs also tend to suffer from disconnects in government energy strategy. This is because carbon reduction policies tend to focus on two main goals: reducing consumption and 'greening' generation. But energy policy usually prioritizes energy security and affordability. As a result, energy policy and carbon reduction policies do not tend to be natural bed-fellows.

So on the one hand, most governments are involved in a massive drive to add all sorts of renewable and green energy sources to their generation mix. But on the other hand, few are putting the necessary thought into the changes that need to happen within the grid to make efficient use of that power. For example, on a number of occasions, the UK has been forced to pay windfarms to switch off their turbines because of an inability to effectively distribute the power they were generating.

### The winds of change

What's more, renewable sources often deliver intermittent power, meaning that distributors will need to find more flexible ways to manage power and bill for consumption. In a (as yet theoretical) renewables-reliant Smart Grid system, real-time prices may actually peak at night when solar generation sources

are offline, or during calm summer days when windfarms are sitting idle.

Financing is also a constant challenge. Since most Smart Meter programs are funded from the balance sheets of the power companies themselves, one would assume that the cost of the program will eventually be passed on to consumers. But at a time of austerity and high unemployment, power companies (many of whom are already vilified by consumers) will have a tough time explaining this to their customers.

Indeed, the consumer is the real lynchpin here, and nobody can be quite sure how they are going to react to Smart Grids. Anecdotal evidence seems to show that UK consumers are at best ambivalent, and at worst outright hostile towards the Smart Metering program. In the Netherlands, consumer concerns related to privacy have all but scuttled the planned Smart Meter roll-out. Programs in Victoria, Australia are also under review as a result of negative consumer reactions.

### The key to evolution

Clearing all of these barriers will require clarity of vision, particularly from government. All too often, well intentioned politicians set lofty targets for their countries and then leave the detail and the legacy to the market

to sort out. But to achieve the kind of change that must happen, government must take a stronger hand.

This means creating an environment that supports the entry of new players in the energy market who – without the legacy of capital-intensive infrastructure – are more likely to see the Smart Grid as a source of opportunity and therefore drive the market forward. A number are already shaking up the traditional markets, including First Utility in the UK, and Red Energy in Australia.

But most importantly, governments need to clearly articulate their vision of the 'end state' and work with power companies, regulators and consumers to communicate the goals, roles and costs that they are being asked to take on.

Having spent billions to install Smart Meters around the world, governments and power companies must now turn their minds towards building the right environment to make the Smart Grid into a reality. And with that, we can look forward to a new, smarter and potentially greener era of energy generation and consumption.

# Moscow: keeping the taps flowing

By Robert Vartevanian,  
KPMG in Russia

For Denis Yanev and his colleagues at MosVodoKanal (MVK), providing clean water and sanitation services to more than 13 million Moscow residents comes down to three main challenges: maintaining a secure supply of safe drinking water; enhancing the efficiency of the water system; and ensuring that services are affordable and accessible to all.

“We are constantly working to improve the quality of our services,” said Mr. Yanev MosVodoKanal, Deputy General Director at MosVodoKanal. “On the one hand, we need to meet and exceed the country’s drinking water standards, but on the other hand our water resources are increasingly deteriorating.”

## Tapping into finance

MVK also faces significant financial pressures. For one, water tariffs in Moscow are lower than most Eastern European countries (and lower than many other Russian municipalities). The company acknowledges that, with a growing gap between rich and poor in the city, increasing the cost of basic services is not an option. The State Enterprise is also seeing reduced demand with water consumption falling across the city in recent years.

“High quality and reliable service is just not possible without financial sustainability,” said Mr. Yanev. “That is why we are always exploring different financing sources such as direct budget investments, loans and – of course – Private Public Partnerships.”

## Realigning legacy systems

While the company owns dozens of pumping stations, treatment plants and distribution systems, they are also dealing with an inherited Soviet water distribution network that relied on huge centralized stations and facilities. As a result, MVK is actively working to develop local solutions that both reduce transportation costs and increase efficiency.

To help achieve this, the utility has entered into eight Public Private Partnerships (PPP) over the past 15 years, with total investments of more than €550 million. Looking ahead, at



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## AN INTERVIEW WITH

### Denis Yanev

Deputy General Director for  
MosVodoKanal

 *We are constantly working to improve  
the quality of our services.* 

– Denis Yanev

least eight more projects are currently in the pipeline with an estimated value of €2 billion. “We think that more intensive use of PPPs could be a solution for many water utilities,” noted Mr. Yanev. “Investors are always looking for conservative opportunities with minimal risk, and that’s what the water sector provides: steady growth, long-term returns and low elasticity of demand.”

#### Pointers on PPPs

The company has learned a lot of valuable lessons about PPPs over the past 15 years and stress five key points to developing a successful water sector PPPs:

- the PPP process cannot be rushed and takes time to properly develop;
- some PPPs require significant upfront costs, but become much more attractive to investors if the right resources have been applied;
- governments must play a role in monitoring and regulating the project;
- PPP structures must be designed to include clear and formal methodologies for reviewing contracts over the term of the project (particularly those that last 10 to 30 years or more); and
- a single-minded focus should be placed on developing transparent and competitive procurement procedures.

“We also ensure that our contracts call for state-of-the-art facilities and equipment to ensure we have a platform for further modernization,” added Mr. Yanev. “In our perspective, that will enable Moscow to stay ahead of demand in the future.”

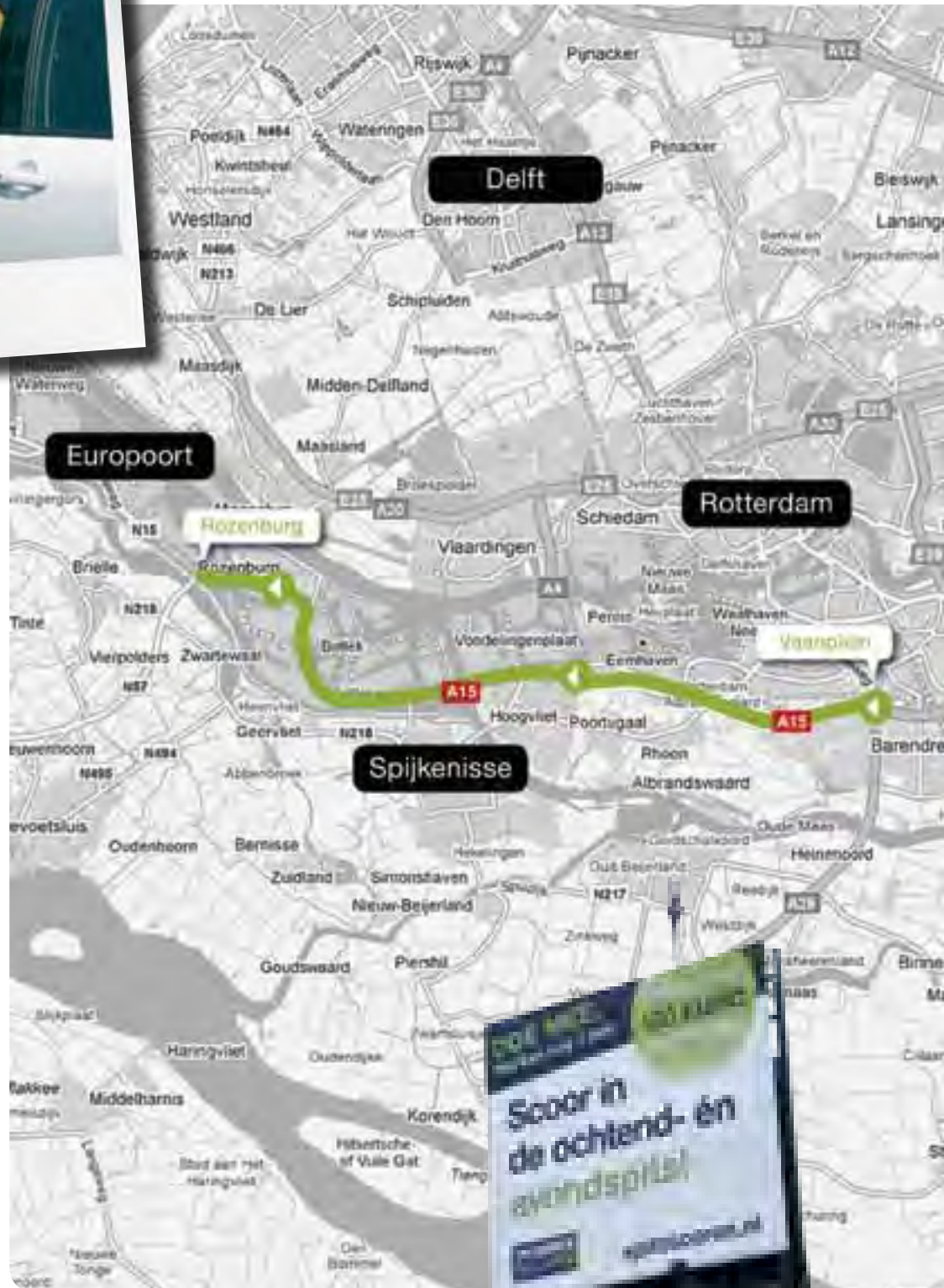


# Reducing urban congestion with a carrot, not a stick

By Fernando Faria, KPMG in Portugal



**Traffic congestion** is expensive. On a macro-economic level, congestion reduces productivity and costs businesses billions of dollars per year. But it also increases the pressure on road infrastructure, leading to **higher maintenance costs** and pricey upgrades to meet **growing demand**.





While some cities (most notably London) have developed road pricing schemes to reduce urban congestion, the Dutch are trying a very different approach: paying drivers to stay off the road. The project is a huge success.

### Paying for results

Run by BNV Mobility B.V. (BNV), a 50/50 joint venture between Brisa and NedMobiel, the 'SpitsScoren' program aims to change the behavior of drivers through a mixture of financial incentives and value-added services. In effect, drivers are offered EUR5 for every day that they choose an alternative to driving on the highways during rush hour. To monitor driving habits, each participant is furnished with a GPS-enabled smart phone and a personalized web page that helps track their use of highways during key periods.

The Rotterdam program, one of two that are currently ongoing, aimed to reduce traffic by five percent during rush hour periods. The program surpassed that goal in the first month, and has already changed the behavior of more than nine percent of road users and almost 60 percent of the participants currently enrolled.

### Running the numbers

But does it make financial sense? The project requires around EUR3 million in annual funding (in Rotterdam's case split between national and various local governments). When compared against the estimated €150 million that is required to widen 40 kilometers of highway, one starts to see the simple logic behind the innovative project.

And while financial incentives are a very strong motivator for behavioral change, the company is also very focused on providing the tools and information to reinforce the change. For example, BNV has leveraged social media sites such as Facebook and LinkedIn to connect potential car-pool users, developed real-time text alerts about traffic congestion, and even opened 'flexible office spaces' at the entry to major highways to offer professionals a place to work until rush hour ends.

### Extending the impact

BNV runs a number of national and local schemes that emulate a similar principle. For example, the AnnAways program works with corporate car fleet managers to help reduce road use by reversing the traditional 'company

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car' structure. The program transfers both the costs and the budget for car leasing, maintenance and fuelling to the vehicle users, who are then encouraged to find ways to reduce costs and – ultimately – pocket the difference. The expected result is a considerable reduction in the amount of kilometers driven and therefore fuel used. Vehicle owners are also expected to select more fuel efficient cars which will further reduce the overall cost and CO<sub>2</sub> emissions.

The success of the system will have important implications for urban centers around the world. The programs could be expanded to cover entire regions or countries, or reduced to specifically focus on one road or special event (say, for example, to reduce road use during an Olympic Games).

And although questions still remain as to the programs viability in emerging markets, it is clear that urban administrators now have two options in their 'congestion-reducing' belt: a carrot and a stick.



To monitor driving habits, each participant is furnished with a GPS-enabled smart phone and a personalized web page that helps track their use of highways during key periods.



# Development agencies and infrastructure:

## the view from two sides of the Atlantic

We were joined by *Timothy Stiles*, Global Chair of KPMG's International Development Assistance Services (IDAS), and *Trevor Davies*, Head of KPMG's IDAS practice in the UK to talk about the infrastructure agenda for development agencies in two of the biggest donor nations. Timothy works and resides in the US, while Trevor operates in the UK and Europe.

**Editor:** Development agencies appear to be putting more focus on infrastructure in the developing world in recent years. What has been driving that trend?

**Trevor Davies:** In the 1980s, infrastructure development was a significant priority for European aid and development agencies, particularly hard infrastructure such as roads, dams and power stations. But they quickly realized that many of the recipient countries weren't in a position to operate and maintain the projects, so there was a bit of a refocusing towards issues that develop human capital instead; education, health, gender equality and so on. This led to a more 'hands off' approach to infrastructure in the 90s that prioritized private investment in the sector. Today,

however, there is broad recognition within the main European agencies of the virtuous relationship between economic development and infrastructure, and that has evolved into a more balanced approach between capacity building and infrastructure development.

**Timothy Stiles:** The US has seen a similar metamorphosis over the past few decades. We see some of that in the establishment of the Millennium Challenge Corporation (MCC) that is primarily focused on infrastructure development, where USAID has traditionally been focused on human and health services. Of course, the MCC has a number of criteria that recipient countries must meet in terms of rule of law, human rights and health,

which effectively means that it is active in far fewer countries than USAID is at the moment. For better or for worse, I also think part of the trend on both sides of the Atlantic has been towards projects that demonstrate value to the donor country's tax payers which is often easier to do with power plants and bridges than it is with mosquito nets and gender equality initiatives.

In the

## 1980s

infrastructure development was a significant priority for European aid and development agencies, particularly hard infrastructure such as roads, dams and power stations.



**The Paris Declaration on Donor Harmonization has obviously been a big help in bringing a level of coordination and transparency in terms of bringing a number of aid agencies together under a joint approach that can be better leveraged by the recipient country.**

**Editor: Clearly accountability and transparency have become a major priority for development agencies. How is that translating into policy?**

**Timothy Stiles:** The funding program in the US, and particularly within USAID, is once again leaning towards local ownership of program funding as opposed to using US-based intermediaries. This is going to have a pretty significant impact, not only in the way countries receive funds from USAID, but also in the types of projects that are ultimately pursued. The reality is that some countries, particularly the smaller states in sub-Saharan Africa, may not have the capacity to manage some of the really large-scale

projects that are needed like airports or ports. Third parties are going to have to continue to play a role, and accountability and transparency in the way those contracts are procured are going to be increasingly important to both development agencies and the local populations of the recipient countries.

**Trevor Davies:** That shift is already underway in Europe. There has been a huge emphasis from development agencies recently on ensuring value for money and evaluating the impact of aid expenditure. In the UK, the Independent Commission for Aid Impact has been established to examine that, and of course Sweden has had a similar body running for some time now. But increasingly the question is how donors can work effectively with recipient governments to help them get the most value from their investment and that comes back to capacity building which has been the real focus of donor agencies and countries for the past decade or so.

**Editor: We have also seen a movement towards greater harmonization between some development agencies. How is that impacting results on the ground?**

**Trevor Davies:** It used to be that a typical African country would have 40 or 50 different donors all working in the same space but with very different objectives. But the capacity of the recipient countries to absorb all of that activity was always stretched and much of that aid lost its value as a result. The Paris Declaration on Donor Harmonization has obviously been a big help in bringing a level of coordination and transparency in terms of bringing a number of aid agencies together under a joint approach that can be better leveraged by the recipient country.

**Timothy Stiles:** In the US, there is a strong need to demonstrate accountability to Congress and – ultimately – the tax payers, so the US often prefers to go it alone. That said, I think there is a lot of value in greater

cooperation with the major global and European initiatives, maybe not on a material basis, but certainly to gain the coordination of efforts and provide a united front on development aid.

**Editor: Developing countries are seeing some of the highest levels of urbanization in the world. Will this change the focus of development agencies in any way?**

**Timothy Stiles:** The US doesn't really have a formalized policy that specifies what proportion of aid is spent on urban versus rural infrastructure. I would argue, though, that MCC's preference has been focused on urban infrastructure. There is a general agreement that with populations in some cities set to double in the near future, urban infrastructure must go through some significant changes to keep up. Otherwise there is growing concern that – without decent living conditions, jobs, access to healthcare and such – this urban migration may set the stage for political unrest or even radicalization. So while there is no clear policy statement about urban development, it clearly will be an important consideration for the US government going forward.

**Trevor Davies:** I think there is a tendency within DFID and the EU to focus on rural areas primarily because they are often underserved by private investment. Urban areas enjoy higher population densities that can support large scale projects through tariffs and PPP approaches. But in rural areas the population density is too low or too geographically dispersed to justify private investment. As a result, European aid agencies are increasingly using trust funds to either enhance private sector investment in these areas or offset some of the market risks that private investors face to serve this part of the population. So if we look at it from the perspective of putting aid money towards the areas that are most in need and underserved, I'd argue that this is the right direction.

# Urbanization in India: the tale of seven cities

By Arvind Mahajan,  
KPMG in India

If you think developing urban infrastructure for an entire city is hard work, try doing it for seven cities. That is exactly what the infrastructure planners with the Delhi Mumbai Industrial Corridor Development Corporation (DMICDC) are doing.

With an estimated 700 million Indians<sup>2</sup> moving into urban areas between now and 2050, the country will need to build the equivalent of 500 cities over the next four decades, just to keep up with this rapid rate of urbanization. The central government also hopes to drive continued economic growth (at a rate of around 8 – 10 percent) for at least the next thirty years to support this urban boom.

## **Driving economic growth and urban development**

In response, the central government, in partnership with six state governments, created the DMIC to support a two-pronged program aimed at both growing the country's manufacturing base

and – at the same time – building new cities in which Indians will want to live, work and play.

According to Amitabh Kant, CEO of the DMICDC (and the creative mind behind the 'Incredible India' campaign in his previous role leading the Tourism Ministry), the main challenge for India is to develop cities that are socially equitable, economically viable and environmentally sustainable. So while DMICDC recognizes that many of their challenges are uniquely Indian, they also acknowledge that lessons can be learnt from various projects around the world: they have taken tips on recycling from Japan, waste water treatment practices

<sup>2</sup> Goldman Sachs, Asia Economic Analyst, 6 July 2007



**“** *Particularly in the Greenfield developments where we are working with a blank slate, but also in the Brownfield, we will integrate technology to develop a digital Master Plan that overlays the geographic one.* **”**

– Amitabh Kant

## AN INTERVIEW WITH

**Amitabh Kant**

CEO, Delhi Mumbai Industrial Corridor Development Corporation

**“** *The process of building new cities in India carries a lot of challenges, but it also provides huge opportunities.* **”**

– Amitabh Kant



from Singapore, and models of mass transit systems from Brazil. “Countries that can build cities by using proven best practices from other parts of the world will be able to achieve a quantum jump in the future and will ultimately provide a better city for their citizens to live and work,” he notes.

### Aligning to a master plan

Planning such a massive project can be extremely complex. That is why Mr. Kant’s team has focused much of their efforts on developing a strong Master Plan to drive development forward. In part, this involves creating a geographic Master Plan that plots out land use, growth areas and infrastructure

for each of the industrial and development zones. But the organization is also looking to integrate the cities with enabling technologies that will propel the urban areas into ‘smart cities’. “Particularly in the Greenfield developments where we are working with a blank slate, but also in the Brownfield, we will integrate technology to develop a digital Master Plan that overlays the geographic one,” adds Mr. Kant.

And while financing a project of this scope is certainly a major challenge, particularly given the fact that most cities fail to return revenues for the first 12–17 years, DMICDC has developed a number of innovative approaches to

close this gap. For one, a development fund has been created between the governments of India and Japan to inject USD223 million to kick-start the project. The program also expects to benefit from rising land values within the development zones to monetize the project and drive revenues to support future growth.

“The process of building new cities in India carries a lot of challenges,” admits Mr. Kant. “But it also provides huge opportunities to develop a sustainable growth trajectory that makes a dramatic impact on the quality of life for the expected 700 million people that will enter into the urban arena over the next 40 years.”



*Fortunately, the MMRDA is one of the few government agencies that is cash rich.*



– Rahul Asthana

# Mumbai: taking a regional view

By Arvind Mahajan,  
KPMG in India

At first glance, the Mumbai Metropolitan Area seems to be facing many of the same infrastructure challenges as other large cities in rapidly-developing countries: massive urbanization, crumbling infrastructure and crippling road congestion. But with one of the world's highest population densities and surrounded by water on three sides, Mumbai is also dealing with some very unique challenges of its own. Not least among these is the spread of urban slums that – by some measures – now cover almost 60 percent of the city.

## Creating coordination

Recognizing the need for a coordinated regional approach to development, the state government created the Mumbai Metropolitan Region Development Authority (MMRDA) in 1975. The organization takes a lead role in preparing infrastructure development plans; formulating policies and programs; implementing projects and helping to direct investments in the region.

“Fortunately, the MMRDA is one of the few government agencies that is cash rich,” noted Rahul Asthana, Metropolitan Commissioner at the MMRDA. “The agency owns large tracts of very valuable land that are leased out and the resulting revenues are then used to finance infrastructure projects.”



## AN INTERVIEW WITH

### **Rahul Asthana**

Metropolitan Commissioner, Mumbai  
Metropolitan Region Development  
Authority

### **Connecting a region**

The MMRDA's main focus today is improving connectivity across the city through mass transit investments and efficiencies. The agency has plotted out a comprehensive transit plan that calls for the investment of more than USD50 billion. Almost half of that amount is earmarked for the development of a new metro system consisting of nine interconnected lines. The first line (Metro One) is due for completion next year and work will start on the second line (Metro Two) later this year.

The MMRDA has also taken the lead in experimenting in alternate ways of reducing congestion. The agency will soon commission the world's second longest mono-rail (and the first for India) and has already built dozens of 'sky walks' that aim to reduce pedestrian traffic on city streets. "In India,

jaywalking is an accepted practice on most city streets, which is one of the issues we are trying to solve with the sky walks," adds Mr. Asthana. "But it is also a challenge because unless we severely clamp down on jaywalking, user uptake will continue to be low."

But in other areas, the MMRDA has seen unmitigated success, particularly in coaxing greater efficiency out of their existing network. Funded by the World Bank, the MMRDA undertook the Mumbai Urban Transport Project that saw capacity of the suburban rail system – the lifeline of Mumbai – increase by almost 35 percent. The project also increased transit interconnectivity through an expansion of the bus services and routes.

### **Maximizing investments to enhance living standards**

To maintain a high level of funding, the MMRDA often engages private

enterprises in Public Private Partnership (PPP) models. "In order to maximize our funds, we often take a PPP route that focuses our funding on covering the viability gap, rather than carrying the entire project cost ourselves," noted Mr. Asthana.

As for the slums, Mr. Asthana notes that they pose a significant challenge to urban development since slum-dwellers must be relocated before work can get underway. In response, the MMRDA has entered into agreements with developers who build low-cost tenements on private land in return for valuable development rights in the city centre.

"In this way we are able to provide a higher standard of living for low-income families and gain access to the land without adding extra cost to the government," added Mr. Asthana. "It is a win-win all around."



# The privatization paradigm

By **Stephen Beatty**, KPMG in Canada

Few words evoke as much passion amongst citizens and their governments as 'privatization'. Often, even the slightest rumor of the privatization of government services is enough to set off Facebook petitions and letter writing campaigns lamenting the government's 'abandonment' of policy objectives. But for governments around the world, privatization is a valuable and essential approach to managing budgets and – far from turning their backs on serving citizens – is a viable way to maintain and improve service levels.



## Privatization approaches to water are not automatically transferable to power, and approaches taken in Europe will not necessarily translate into Africa or the Middle East.

Both camps have a valid point however. Consumer/user protection must be a central tenet in any government approach to privatization; it cannot simply be driven by short-term financial gains. This will require governments to think carefully about how they might use regulation to ensure that policy and financial objectives continue to be met post-privatization. But all too often, governments telescope these regulations to focus on meeting certain financial outcomes and fail to embed levers that will allow them to ensure (and adjust) long-term alignment to policy.

### The capital imperative

But governments are facing their own challenges. The recent financial crisis and ongoing debt concerns have put budgetary pressure on almost every jurisdiction, creating a keener appetite for privatization as a means of rebalancing capital. A growing number of governments are even starting to approach their capital allotments in much the same way that asset managers do; using the monetization of one asset to refocus capital onto a different project within the portfolio.

Take, for example, airports in the developed world. From a purely financial perspective, most have the potential to be run as a viable stand alone business. In these cases, governments may well consider privatizing the facility and reinvesting the proceeds into another capital-intensive infrastructure project – say high speed rail – that further meets their policy objectives. And while some consumers (often unduly) fret about the potential for airport privatization to lead to price increases and

sub-standard service, governments can respond to these concerns by creating appropriate regulations that protect the public interest.

### Unique structures for unique situations

But privatization is by no means a 'one size fits all' solution to government fiscal imbalances. In fact, each government business entity must be carefully analyzed to identify its potential as a stand-alone business and, if applicable, tailor the solution for each situation. This is particularly true for infrastructure; privatization approaches to water are not automatically transferable to power, and approaches taken in Europe will not necessarily translate into Africa or the Middle East.

What is clear is that governments will need to do their homework when approaching privatization: they must consider how the change in ownership will impact their ability to ensure public policy and protect the public interests; they must examine the financial imperatives that underpin the action; and they must create regulations that address all of those issues while protecting the commercial viability of the business.

If governments can accomplish all of that, then privatization may quickly prove itself to be a valuable tool that not only frees up much needed government capital, but also enshrines public policy objectives and protects the interests of citizens.

# Manchester: a phoenix rises

By Lewis Atter,  
KPMG in the UK

Widely viewed as one of the most significant and successful urban renewal programs in the world, the City of Manchester has a lot to boast about today.

Not long ago, the city's economy was on a downward trajectory. The traditional economic base of manufacturing was starting to feel the pressure of a globalizing world; employment rates were falling, economic investment was almost non-existent and – ultimately – the tax base was quickly shrinking.

## A platform for growth

By the early 1990s, city administrators had embarked on a plan to develop a platform for growth that looked beyond the manufacturing sector to identify and maximize the city's assets. "Over the past 20 years, we've been focusing on key areas such as our airports, universities and catchment areas as opportunities to diversify our economic base," said Sir Howard Bernstein, Chief Executive of Manchester City Council. "Today, Manchester is often seen as a knowledge economy with significant segments in new media, research, science and technology, as well as a transformed advanced manufacturing sector."

## Tragedy need not de-rail renewal

But in 1996, the city centre was the target of a terrorist attack that injured more than 210 people and destroyed more than 530,000 square feet of retail space and 610,000 square feet of office space. "The recovery process after that terrible day is now widely seen as the start of a second phase of a journey



## AN INTERVIEW WITH

### Sir Howard Bernstein

Chief Executive of Manchester  
City Council



*Over the past 20 years, we've been focusing on key areas such as our airports, universities and catchment areas as opportunities to diversify our economic base.*



– Sir Howard Bernstein



that has driven more value into the Manchester economy,” noted Sir Howard. “And since then, we’ve been helping other cities like Christchurch in New Zealand to understand how they can rebuild their economies in the aftermath of great human tragedy.”

#### Getting the most from infrastructure investments

Over the past two decades, the City Council has also taken a more macro-economic view of infrastructure investment that not only looks at the potential economic and quality-of-life outcomes of each project, but evaluates spend against the impact on the economic potential and the tax base as a whole, thereby enabling the city to prioritize financially sustainable initiatives that result in a net gain for the city.

“We are working with different institutions and private sector parties to bring forward solutions that not only tick our competitiveness and productivity boxes, but also support the development of a low carbon economy,” added Sir. Howard. One of these is the Greater Manchester Transport Fund which has committed more than GBP1.5 billion to new infrastructure enhancements over the past few years with every GBP targeted at maximizing the impact on employment and productivity while also delivering reduced carbon dependency and social objectives.

The Greater Manchester Transport Fund has  
committed more than

# £1.5 billion

to new infrastructure enhancements

#### Capitalizing on Culture and Sports

The city has also invested significantly into cultural and sporting infrastructure that has paid off in spades. The city hosted a hugely successful Commonwealth Games in 2002, launched the world-famous Manchester International Festival in 2007 (leading a national UK newspaper to declare that “Manchester is the beating cultural heart of Britain”), and most recently saw two great football wins with the Manchester City Football Club winning the FA Cup and Manchester United securing the Premier Championships.

For city administrators, the focus on sports and culture has far deeper implications than providing entertainment for its citizens. “Culture and sport are particularly important in changing our role as a destination city,” notes Sir Howard. “Investments in these sectors encourage tourism to the city and help us build a stronger retail sector which, in turn, brings more private investment into the city.” The strategy is already seeing massive results: the Manchester Transport Fund has committed more than £1.5 billion to new infrastructure enhancements.



## AN INTERVIEW WITH

### James Stewart

Chairman of KPMG's Global Infrastructure Practice and former Chief Executive of Infrastructure UK

Earlier this year, James Stewart, OBE, joined KPMG's Global Infrastructure Practice. Most people know James as the 'face of UK infrastructure' having served as the Chief Executive of Infrastructure UK where he led the delivery of the UK's National Infrastructure Plan and before that CEO of Partnerships UK. We caught up with James to talk about his experience and what he has learned since joining KPMG in the UK.

**Editor: Looking back on your fifteen years leading UK infrastructure, what were some of the lessons that you learned?**

**James:** I think the most valuable lessons for me related to the power of the Public Private Partnership (PPP) model for infrastructure delivery. At the beginning, the UK was really pioneering the PPP model and – obviously – we had to learn from our mistakes as we went along. One of the great consequential benefits of the PPP program was the ability to build capacity in the local market by providing a reliable and predictable pipeline of projects with a trusted procurement approach which, in turn, enticed a lot of the bigger players into the market.

We also found that PPP models are not the answer to every infrastructure project. Some of the really large deals are ultimately much too complicated and carry too much risk for private companies. But if used at the right time and the right place, PPPs can be very successful. In the UK, we built a massive amount of infrastructure – on time and at budget – that really would not have been there without the PPP program.

**Editor: You have visited a significant number of countries since joining in April. What are some of the common infrastructure themes that you are seeing emerge around the world?**

**James:** One of the biggest trends recently has been the need for increased government intervention in the markets. The global financial crisis reduced private sector risk appetites and overall liquidity in the markets. If governments want to achieve an aggressive infrastructure investment plan, they are going

to need to intervene more to make that appealing to investors. There is a big opportunity for KPMG's Global Infrastructure practice to help governments structure the optimum support package.

It's also clear that some of the developing countries, particularly in Asia, are investing much higher proportions of GDP towards infrastructure development. In part, this is a drive to bring essential services to people for the first time, but it is also because that of huge population growth which will drive up demand for services exponentially.

**Editor: Have there been any big surprises so far?**

**James:** There seems to be a new surprise every day, but some of the statistics for population growth and urbanization are truly mindboggling. For example, the Asia Development Bank thinks that in the next twenty years more than 1.1 billion people will move into cities in Asia Pacific alone. That's about 137,000 people moving into cities every day. Clearly, that is going to create significant infrastructure challenges very quickly.

**Editor: What are you enjoying most about the new job?**

**James:** I've had a number of opportunities already to sit down with clients around the world and explore their infrastructure challenges. What is great about KPMG's network is the ability to combine global experience with local skills and capabilities. This has really allowed me to hit the ground running.

For me, being able to spend my days focused on solving massive infrastructure challenges in different locations is a wonderful and privileged experience, and I look forward to meeting more of the infrastructure clients around the world over the next few months.



*One of the biggest trends recently has been the need for increased government intervention in the markets. The global financial crisis reduced private sector risk appetites and overall liquidity in the markets.*



– James Stewart

Asia Development Bank thinks that in the next twenty years more than

**1.1 billion**

people will move into cities in Asia Pacific alone.



# Brisbane's blueprint for urban infrastructure

By Paul Low,  
KPMG in Australia

**Coordinating infrastructure development – especially funding – across multiple levels of government can often be a massive challenge, particularly when your city spans multiple jurisdictions. In some of the most mature and developed cities of the world, jurisdictional disagreements can (and often do) delay or derail even the most critical infrastructure projects.**

Since 2005, close to AUD22 billion has been invested in urban infrastructure projects in Brisbane and South East Queensland. Looking ahead, there are significant plans for further investment including:

- Airport Link Toll Road and Busway (AUD4 billion)
- Northern Link Toll Road (AUD1.7 billion)
- Gold Coast Rapid Transit (AUD1 billion)
- Cross River Rail (AUD8 billion)

State and city administrators in and around Brisbane, Australia, however, seem to have largely solved that challenge. “We now have a pretty mature blueprint for how we identify, plan and deliver infrastructure in the South East Queensland (SEQ) region,” said David Stewart, Director-General of the Department of Transport and Main Roads for the Queensland State Government. “On the whole, the approach is well supported by the State government and Local Councils – who work together to plan the region’s growth and identify the key infrastructure priorities for the short,

medium and long-term. The Australian government also see it positively in their consideration when allocating federal funds.”

## **Booming Brisbane**

Brisbane may not be the biggest city in Australia, but it is the fastest growing. Having seen consistently strong growth over the past 35 years, the population has continued to boom through the Global Financial Crisis and is now expected to expand by more than 45 percent to 4.4 million in the next 20 years.



## AN INTERVIEW WITH

### David Stewart

Director-General of the Department  
of Transport and Main Roads for the  
Queensland State Government

*“We now have a pretty mature blueprint for how we identify, plan and deliver infrastructure in the South East Queensland (SEQ) region.”*

– David Stewart

“In SEQ, we have a very clear regional plan that has mapped out future land-use and growth patterns,” notes Mr. Stewart. “This, in turn, assists us develop our transport infrastructure requirements in order to meet those growth projections. We then overlay the region’s 20 year Infrastructure Plan and Program, and work to support local integrated infrastructure plans through local Councils who translate strategies in a way that makes sense for their community’s unique needs.”

#### A mandate to integrate

Supporting this structure are a number of government initiatives aimed at creating more integration between government departments and services. At the policy and investment level, the Queensland government has amalgamated the former transport and highways (main roads) agencies into a single integrated transport department and established the TransLink Transit Authority with a charter that is focused on public transport service delivery.

This model allows the State Government to focus on testing alternate policy and investment choices across transport modes in a more integrated manner. It has also enabled the government to integrate services across multiple operators and jurisdictions, ensure a high level of service quality, and retain some of the levers that it needs to influence usage. In recent years, TransLink introduced a smartcard to support

integrated fares across the city’s public transit network, and already the card has been adopted by almost 80 percent of local transit riders.

“We also have a very unique process called TravelSmart where we send people out to individual houses to help walk families through some of their options for reducing their drive time, using local transit or taking more ‘active’ transport like biking or walking,” added Mr. Stewart. The results speak for themselves: in a recent trial in north Brisbane, car usage dropped by 13 percent. The region has also seen a 22 percent increase in transit use and a whopping 50 percent increase in cycling and walking in many neighborhoods.

#### Putting a unique spin on global best practices

Mr. Stewart is also quick to credit other world-class cities for ideas that Brisbane has adopted, such as the city’s new busways which are now experiencing patronage growth of around 20 percent; an idea adapted from Ottawa, Canada over a decade ago. “We’ve looked at great working models like the Transport for London ticketing systems and the New York Taxi service to see how they get their best outcomes,” notes Stewart. “But we still want to be Brisbane, because there is a lot of uniqueness that we love about our part of the world.”

# South Africa: a bright future ahead

By **De Buys Scott**, KPMG in South Africa



With one of the highest urban population ratios in Sub-Saharan Africa, South Africa faces a number of unique and dynamic challenges in their effort to provide efficient and accessible infrastructure to some 30 million city dwellers.

## **A range of competing priorities**

One key area receiving particular attention in South Africa is the urban transportation system, which has seen remarkable improvements over the past five years. In part, this is related to the development of a Bus Rapid Transit system in a number of key urban areas such as Johannesburg, Cape Town and Tshwane. At the same time, Prasa Metrorail (South Africa's biggest commuter rail service) is planning to upgrade and replace their entire rolling stock to increase efficiency and safety. And while many people still choose to take the faster and more flexible private taxis, many urban governments are actively working to promote mass transit as a more sustainable solution to urban transportation challenges.

Social infrastructure such as hospitals and schools are also in the spotlight. South Africa has a large and dynamic private hospital system that, while effective, is often out of reach of poorer citizens. Recognizing the deteriorating state of the public hospital sector, the National and Provincial Departments of Health have outlined a plan to expand and rebuild the public health facilities to bring up the standard of care within a structure that is affordable to the mass population.

## **Making progress on power**

Of course, much has also been made of the country's troubled electricity grid and generation capacity which has resulted in widespread rolling blackouts on a number



**Integrating and funding such massive urban infrastructure projects is certainly a challenge for South Africa's municipalities.**

of occasions. And while the national power authority (Eskom) is making progress on its New Build Program (which envisions some 16,000 MW added to the grid by 2017), they have also negotiated deals with many of the country's largest power users to ensure that consumers retain a secure service until more generating capacity can be brought online. A comprehensive Integrated Resource Plan has been finalized and published which sets out the generation strategy for the next 20 odd years.

#### **Advantage South Africa**

Integrating and funding such massive urban infrastructure projects is certainly a challenge for South Africa's municipalities. But they do enjoy a number of significant advantages over their peers across the rest of the continent. For one, the country's financial system is very healthy and sophisticated and has not suffered from the same liquidity challenges still haunting both rich countries and poor.

The country also has a long history of structuring and executing successful Private Public Partnerships (PPPs). Indeed – where they make financial sense, transfer risk and improve affordability – PPPs tend to be the preferred choice for the National Treasury.

#### **Still blowing the vuvuzela**

South Africa's hosting of the 2010 FIFA World Cup certainly acted as a catalyst to urban infrastructure renewal. But, rather than fizzle out after the final whistle was blown, the country has used the event as a trigger to release a significant amount of infrastructure renewal, particularly in areas that support economic growth.

But change on this scale is somewhat unprecedented in South Africa's cities, so the next five to ten years will be a real test of their ability to see projects through the development and operational lifecycles. For now, however, the signs are all very promising.

# Urban infrastructure from the contractor's view

By Enrique Fuentes Egusquiza,  
KPMG in Spain

**If you want to know how to develop urban infrastructure, you might want to ask the contractors who design, build and manage it. All around the world, privately held infrastructure contractors are taking an increasing role in delivering on the public sector's infrastructure demand.**

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**"We try to make infrastructure smarter and more efficient by applying new technologies that not only improve civic well-being, but also improve sustainability ratings, and facilitate dialog with consumers through the efficient management of the communications process."**

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**– Baldomero Falcones**

FCC, a Spanish-based multinational infrastructure and municipal service provider, has been developing and maintaining urban infrastructure for more than a century, giving the company a unique perspective on the challenges facing cities. FCC Citizen Services operates in 54 countries, is building infrastructure on four continents and provides environmental services in 5,000 municipalities worldwide.



## **Responding to change**

According to Baldomero Falcones, Chairman and CEO of FCC, cities are feeling pressure from multiple sides: "Most cities are facing a scarcity in economic resources as a result of the global financial crisis, a constant need to integrate new city residents seeking a better life in urban areas, and growing demand for more environmental policies and practices. This requires us to come up with innovative solutions for the infrastructure that we construct. We strive to do more with fewer resources by, for example, applying efficiency-related criteria to both the construction and design phases of infrastructure development with the ultimate goal of reducing construction and maintenance costs, or using innovative materials to reduce costs and carbon emissions."

These pressures have led Valderrivas Portland Cement, one of FCC's subsidiaries, to conduct research into using a

## AN INTERVIEW WITH

**Baldomero Falcones**  
CEO of FCC

 *Good urban planning must always trump political opportunism.*  – **Baldomero Falcones**



raw material in concrete pavements that naturally captures CO<sub>2</sub>, thus reducing emissions. The pavement also provides a substitute to bitumen for road building and represents a basic and locally-available material for paving that can replace petroleum derivatives and therefore help reduce Spain's reliance on imports.

"We try to make infrastructure smarter and more efficient by applying new technologies that not only improve civic well-being, but also improve sustainability ratings, and facilitate dialog with consumers through the efficient management of the communications process," noted Mr. Falcones. "Cities are beginning to recognize that infrastructure is a great lever for advancing the sustainability agenda."

### **Establishing long-term priorities**

According to FCC, one of the key requirements for sustainability is government's ability to establish their priorities for resource management by taking a long-term view of the impact that their decisions may have on the sustainability of the city or municipality. "Good urban planning must always trump political opportunism," acknowledged Mr. Falcones. "This should be based in three principles: first, acknowledge the transformation capacity of infrastructure and its contribution to sustainability; second, acknowledge that long-term thinking is inherent to sustainability policies, so when it comes to infrastructure, politicians must think in time frames that extend beyond their mandate; and third, promote PPP's as a way to develop efficient infrastructure financing and management."

One example of this type of long-term thinking can be seen in the Madrid Metro where successive regional governments have advocated for the expansion of the

network. Since the early 1980s, the system has expanded from around 80 miles to encompass more than 300 miles of track today. The scale of change was truly massive: the MetroSur line (which FCC participated in developing) is thought to be one of the largest civil engineering projects that Europe has ever seen; the new Puerta del Sol metro station (another FCC project) dug the largest platform cavern ever to be excavated, measuring 207 meters in length, 20 meters in width and 15 meters in height.

### **Meeting the challenge**

An area of particular interest to both public and private sector infrastructure players is the growing use of Public Private Partnerships (PPPs) to deliver infrastructure in urban settings. On the funding side, many governments are actively engaged in developing regulatory and financial environments to help stimulate investment from the large infrastructure funds which, in turn, will inevitably require more involvement from the private infrastructure contractors.

"High-quality infrastructure is a transformative asset that should merit the interest of investors who believe in long-term investing and are willing to contribute to the development of new urban spaces," notes Mr. Falcones. "But getting there will require businesses, governments and investment funds to be able to promote PPP collaboration and design balanced funding formulas that benefit everyone, particularly the citizens."


# The secret to Singapore's infrastructure success

**By Satya Ramamurthy,**  
KPMG in Singapore

Few cities are as revered by urban planners as Singapore. And for good reason: while the city-state has the highest population density in Asia, it also boasts the world's third highest GDP per capita and an unemployment rate below 2 percent. With more than 5 million people inhabiting less than 700 square kilometers (less than half the size of Greater London), all Singaporeans now live in urban areas.

## AN INTERVIEW WITH

**Mr. Chew Hock Yong**  
CEO of Singapore's Land Transport Authority

 *By combining ownership and usage measures, we have been able to ensure that our roads are as free-flowing as possible.*

– Chew Hock Yong



Singapore's government places a high emphasis on developing sustainable transportation solutions for the country's population. And they have been highly successful: only around 16 percent of Singaporeans own cars, with the rest relying on the highly efficient Mass Rapid Transit system (which saw daily ridership of almost 2 million in 2009) and the extensive bus service (providing more than 3 million daily trips).

### Investing in growth

"Singapore is a small city with a fast growing population and economy," noted Mr. Chew, CEO of Singapore's Land Transport Authority (LTA). "The demand on public transportation infrastructure has been increasing, so we are executing an aggressive plan to enhance our transport infrastructure over the next ten years."

For example, the LTA is in the midst of a USD49 billion expansion of the Mass Rapid Transit system to add more than four new lines and double the current rail system within the next ten years. The first phase, the Circle Line, is expected to open with 28 new stations in October 2011 with two other stations to follow next year. The Singapore government is funding the capital costs directly and, once built, the LTA will engage private operators to provide the service.

### The power of policy


But the Singapore government does not just rely on funding to solve their transportation infrastructure challenges. Car ownership and road congestion are kept in check through policy that provides for a system of tolls and registrations that work together to reduce the number of cars on the road. For example, the government requires all prospective car owners to first obtain a Certificate of Entitlement through public auction. This has allowed the Land Transportation Authority to limit the number of cars on the road to around 800,000. Drivers are also subject to time of day and usage tolls that further reduce the use of cars in the country.

"By combining ownership and usage measures, we have been able to ensure that our roads are as free-flowing as possible," added Mr. Chew. "And by limiting the growth of COEs to just 1.5 percent per annum, we can reliably plan our road infrastructure needs into the future."

### Taking a holistic and long-term view

Mr. Chew cites the government's focus on long-term planning as a critical factor in the city's transportation infrastructure success. "When we look at planning in the long-term perspective, we often become more conscious about how our short-term plans fit into that long-term vision and what the implications are for the entire city."

In this, Mr. Chew credits the city's 'whole of government' approach to development which involves planning across all of the different aspects of government to develop a single, coordinated concept plan under the Urban Redevelopment Authority (URA). "The concept plan looks fifty years into the future and takes into account all aspects of growth such as housing, recreation, water and transport," adds Mr. Chew. "This means that we have a single vision of where we need to advance to and how we can get there to meet the growing demands of our population."

 *When we look at planning in the long-term perspective, we often become more conscious about how our short-term plans fit into that long-term vision and what the implications are for the entire city.*

– Chew Hock Yong



# Decar

By Dr. Timothy Stone,  
KPMG in the UK



**It will require government to create impactful policies and regulations, and instill a culture of active change to achieve the scale of transformation that the introduction of all-electric cars will soon demand.**

Since their introduction to consumers in 1997, hybrid-electric vehicles have rapidly turned the auto industry on its head and caused no end of consternation to the oil and gas sector. Hybrids have also quickly captured the attention of consumers; by May 2011, more than two million Americans had reportedly bought a hybrid vehicle, the majority gladly paying a premium to 'do their bit' for carbon reduction.

Certainly, in the battle to reduce a city's carbon footprint, hybrid cars help. So, too, will the introduction of more efficient and durable hybrid designs that – over the next few years – will start to deliver new models with even greater electric range and lower (but not zero) carbon emissions.

#### **Unhook the pump**

But it will be the development and consumerisation of their still-emerging cousin, the all-electric vehicle, that will have

# b<sup>2</sup>onizing



## urban personal transport

**Will the hybrid car change the world? Quite likely.  
But probably not in the way you think.**

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a far greater impact in the world. Indeed, driven by consumer demand, high energy prices and supportive government policy, the all-electric vehicle sector has already been reenergized.

In part, this is because many of the more stubborn challenges that plagued all-electric vehicles in the past have started to seem solvable. Designs are under development for cars that can travel 300 miles on a single charge (effectively curing all but the most intrepid drivers of 'range anxiety'), creative ideas for the development of a network of 'top up' and 'swap out' stations are being proposed, the cost of the batteries themselves are starting to fall – even while their energy density rises.

The wide-spread adoption of carbon-free personal transport will no doubt be a cause for celebration, but it will also bring about a range of new challenges and significant opportunities that will forever alter the relationship between governments and their car-addicted citizens.

### **Can the power grid keep up?**

Let's start with the most obvious: even with higher energy density, electric vehicle batteries will require massive amounts of power. But, as

North Americans learned in 2003 and many in the developing world are reminded every day, the world's current power generation capacity and distribution networks are often old, neglected or inefficient. They were designed, in truth, for a different era. To be sure, the strain of hooking millions of power-hungry cars onto the network will be too much for the current system in most cities. Worse, many existing generating facilities (again, particularly in the developing world) are overly reliant on dirty fossil fuels which, in effect, means that consumers are doing little more than 'downloading' their carbon use to the power generator.

In this, energy regulators and governments will need to take decisive steps to develop a set of policies and regulations that support a long-term and sustainable approach to power generation and distribution capacity. For state-owned power outfits, this means a concerted effort to design, construct and maintain new and – when possible, low-carbon – sources of power. Deregulated markets will need to focus on not only creating the right incentives and risk-sharing agreements to drive investment in this area, but will also need to demonstrate a long-term commitment to the industry.

This goes for low-carbon energy sources too: while the economics of low-carbon power are not currently strong enough to totally usurp cheap coal and omnipresent oil, recent developments point to an imminent reduction in cost for some technologies which will change the economics of power generation completely.

### **The end of the road for gas tax**

The introduction of hybrid vehicles has also signaled a need for new thinking about how taxes are calculated and levied. Many governments rely on gas taxes, paid at the pump, to support their budgets for the development and maintenance of roads, bridges and public transit systems and – in many cases – to bolster other parts of national expenditure. But all-electric cars will effectively eliminate this revenue stream without a commiserate reduction in service use. Indeed, it would be easy to argue that – stripped of a reliance on expensive gasoline – consumers might be more inclined to take to the roads for a pleasure trip, thereby increasing demand for roads and road maintenance.

These are just some of the complex issues that governments – at all levels – will need to solve if they hope to decarbonize urban personal transport.

And herein may lie the crux: the innovation of electric vehicle developers may soon overtake the capability of government to effectively support the new models.

### **Planning for the future**

The urgency for government cannot be over-emphasized. In just a matter of a few years, power grids will already be feeling

the strain and tax revenues will already be diminished. Leaders around the world need to start thinking seriously about developing a sustainable, long-term and integrated plan that can mitigate the risks and identify the opportunities in the move towards low-carbon and no-carbon personal transport.

In itself, this will require some new ways of thinking within most government corridors. For one, the traditional rivalry and competition between government departments will need to be overcome. The changes underfoot require the active participation and buy-in from multiple government departments (transport, infrastructure, energy, urban planning, treasury – to name but a few) who will need to work in harmony to accomplish the huge task at hand.

Regional and global integration and cooperation will also be important. Competing (and often subsidized) national standards vying for global domination is a counterintuitive proposition and will only serve to dampen adoption and increase costs to consumers. Governments will need to work together in order to develop a global consensus around standards and ensure that the global divide does not deepen; VHS vs. BetaMax is not a story to be repeated for automotives. The formation of a multi-lateral institution or forum to support this dialogue would help, but the lack of one should not hinder progress.

### **A steep climb ahead**

Possibly the most important change that government may face, however, will be in their capacity to facilitate and catalyze change. In truth, massive, disruptive and sudden change has not traditionally been the forte of government bureaucrats and regulators.

But this is exactly the kind of change that will happen in some countries; where it does, it cannot be left to market forces and Darwinian expectations that only operate well on longer, slower timescales. It will require government to create impactful policies and regulations, and instill a culture of active change to achieve the scale of transformation that the introduction of all-electric cars will soon demand.

There should be no doubt that hybrid and all-electric cars will bring unprecedented change to the future urban landscape. The hope now is that governments can keep up.

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**Governments will need to work together in order to develop a global consensus around standards and ensure that the global divide does not deepen; VHS vs. BetaMax is not a story to be repeated for automotives.**

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A black car is parked at a public charging station on a city street. A yellow charging cable is plugged into the car's charging port. The background shows a multi-story building with many windows.

**Leaders around the world need to start thinking seriously about developing a sustainable, long-term and integrated plan that can mitigate the risks and identify the opportunities in the move towards low-carbon and no-carbon personal transport.**



## AN INTERVIEW WITH

### **Dr. Anne Kerr**

Director Sustainable Development,  
Mott MacDonald

**“** *If the sustainable transit option is twice as expensive as the higher-polluting alternative, it will never be successful.*

**– Dr. Anne Kerr**



# The sustainability challenge for cities

In the global fight for carbon reduction, urban areas will be the decisive battle ground. And as more and more people move into cities over the coming decades, the relationship between our cities and our environment will become increasingly important.

### **Planning an eco-city**

Many countries are now experimenting with the development of greenfield 'eco-cities' that are planned from scratch and built around the principle of achieving reduced – or even zero – emissions.

Urban planning for eco-cities is quite unlike traditional city planning. For one, eco-planners need to understand the resources available to the city and what activities those resources can support. “The very first thing that eco-cities need to focus on – before breaking ground on a single building – are the three big considerations of environmental urban planning: water, energy and waste,” advises Dr. Anne Kerr, Director Sustainable Development at Mott MacDonald in Hong Kong. “For most urban planners, that means really turning the planning process around on its head.”



**“The very first thing that eco-cities need to focus on – before breaking ground on a single building – are the three big considerations of environmental urban planning: water, energy and waste.”**

**– Dr. Anne Kerr**

### **Making existing cities more eco-friendly**

The bigger challenge, however, will be in ‘greening’ the world’s existing cities. Here, many governments are turning to sustainable mass transit systems to achieve a portion of their carbon reduction goals. And while the focus must be on low-carbon alternatives, it is equally important to develop a system that is both efficient and competitive. “If the sustainable transit option is twice as expensive as the higher-polluting alternative, it will never be successful,” notes Dr. Kerr. “Very few people will pay more for transit based on altruistic reasons alone.”

But every city is unique and each brownfield project must be explored within the context of the city’s environment and resources. For example, cities such as Hong Kong, London and New York already enjoy highly-efficient, low-carbon mass transit systems and will therefore need to seek other solutions to further reduce their carbon footprint.

### **Using less H<sub>2</sub>O to reduce CO<sub>2</sub>**

One significant – but often overlooked – opportunity comes from reducing water consumption. “Water treatment requires substantial amounts of energy, particularly in locations with

scarce natural water sources,” noted Dr. Kerr. “In the Americas and Asia where per capital water consumption often tops 300 liters per day, cities can dramatically reduce their carbon footprint by working with consumers to bring water use down to a more sustainable level – somewhere in the range of 150 liters per capita per day.”

But changing human behavior – a key requirement of sustainability – is often the hardest task for governments. Financial incentives are generally seen as the most successful approach, but often require authorities to develop clear policies to ensure that consumers share in the financial savings that are delivered.

### **The future is green**

Dr. Kerr is optimistic that cities can make a difference in the global effort to reduce carbon emissions. “Once people saw the hole in the ozone layer as a serious risk to human health, the world came together to form an immediate and effective response,” notes Dr. Kerr. “So I believe that with collective action and collaboration between people, companies and governments, we can also make a very positive change in the way cities interact with the environment.”

# Cities' pivotal role in the climate change debate:

## CDP Cities 2011 progress report


By **Yvo de Boer**, KPMG's Special Global Advisor on Climate Change and Sustainability

Climate change is widely recognised as one of the most serious challenges the world faces, with consequences that go far beyond its impact on the environment alone. It is no longer the question 'if' we have to move into a low-carbon energy future but 'how' we will get there.

Consuming more than 75 percent of the world's energy, and producing around 80 percent of its greenhouse gases, the role of cities is an important nexus in the climate change debate. Their populations and infrastructure are immensely vulnerable to the damaging effects of increasing temperatures, sea level rise and extreme weather events. Additionally, cities are well positioned to anticipate climate change due to their enhanced understanding of local conditions and needs.

### **Supporting collaboration between cities**

Driven by a common belief that city governments play an important role in reducing global carbon emissions, a group of large cities (known as the C40 Cities) have come together to create an effective forum to support collaboration and information sharing between cities and demonstrate leadership. This year, the C40 Cities collaborated with the Carbon Disclosure Project (CDP) on a research to measure the climate impact of each participating city as well as their plans for action. An impressive 72 percent of the C40 Cities responded to the survey, representing over 1,200 million metric tons of CO<sub>2</sub>-equivalent, a figure roughly equivalent to the total emissions of a country like Japan or Germany. The survey shows that a number of cities have pioneered extraordinary approaches to GHG reduction and climate resilience.

A person wearing a light-colored t-shirt, shorts, and a cap stands with their back to the camera in a vast, arid landscape. The ground is parched and cracked into large, irregular polygons. In the distance, a low, reddish-brown wall or horizon line is visible under a clear, deep blue sky. The person's shadow is cast long and dark on the cracked earth.

**Consuming more than 75 percent of the world's energy, and producing around 80 percent of its greenhouse gases, the role of cities is an important nexus in the climate change debate.**

## More than 90 percent of disclosing cities identified themselves as 'at risk' due to climate change and over forty percent reported that they are already dealing with the effects of climate change in their regions.

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### Taking a leadership role

Nearly every responding city reports the involvement of their senior leadership in taking responsibility for climate change; many also make special note of their efforts to engage local citizens, businesses and other stakeholders in climate change-related decisions. For most, the need is urgent. More than 90 percent of disclosing cities identified themselves as 'at risk' due to climate change and over forty percent reported that they are already dealing with the effects of climate change in their regions.

The survey also showed that – while cities have made a strong start – there are still a number of areas where more support is needed. Indeed, challenges remain for many city governments looking to build on the low carbon movement. National governments, non-governmental organisations and the private sector can all work to help cities by:

- *Improving and standardizing GHG measurement methodologies.* Cities are using many different methodologies to guide them in their GHG measurement activities. City governments will benefit from coordinated efforts to standardize these protocols to make measurement of emissions easier, more transparent, and more comparable between cities.
- *Enabling financial forecasting related to climate change investment.* City governments, like many other entities, are struggling to put clear numbers on the investments needed to achieve their GHG reduction targets. Technical assistance and private sector input might help cities to improve their ROI on climate change projects.

- *Creating better tools for city-level risk assessment.* City governments are leading the way in analyzing the risks from climate change in their regions. The international community can support these efforts by offering better tools, including specific risk assessment methodologies for urban areas.
- *Adding value through city emissions data validation.* In the private sector, data validation and verification is becoming fundamental for establishing credibility with key stakeholders. An increasing number of cities indicate that all or part of their emissions data (city government operations and/or city-wide emissions) is verified to some degree.

Despite a complex array of challenges, it is encouraging to see that both C40 cities and non-C40 cities are (voluntarily) taking great strides towards shaping the global approach to climate change. Cities that measure and analyze their emissions will be in a better position to manage them and adapt to new circumstances. Each city can be a frontrunner in the combat against climate change in its own right.

Although it is encouraging to see that many cities have articulated a strategic vision around energy and climate and have developed GHG reduction emissions targets and innovative measures, it is only through a collective effort that climate change can be seriously contested.

# Global diary

KPMG professionals are committed to sharing insights and exploring issues and opportunities through industry events. Here we share a selection of recent and upcoming forums. Follow the links to learn more or email us at: [infrastructure@kpmg.com](mailto:infrastructure@kpmg.com)

## London, UK

### SportAccord International Convention

4-8 April 2011

KPMG hosted an exhibition booth presenting strategies for the development and management of major sporting event infrastructure at SportAccord's annual flagship event. The convention gathers the most senior members of the international sport community to build relationships, share knowledge and develop ideas that will benefit the entire community.

[www.sportaccordconvention.com](http://www.sportaccordconvention.com)



## Miami, USA

### Infrastructure Summit: An Island Perspective of a Global Challenge

21-23 September 2011

Premiers and Ministers of State for island economies around the world are participants in this Summit. The event is the first of its kind and focuses exclusively on the unique opportunities and challenges involved in developing islands' infrastructure.

<http://mailer.kpmg.co.uk/forms/TOGIS2011>



## Hanoi, Vietnam

### Vietnam Power Summit

22-23 June 2011

Over the next ten years Vietnam plans to build 95 power plants with an estimated investment of \$39.58b underscoring a new phase of foreign investment into Vietnamese infrastructure. KPMG was a proud sponsor of this Summit for Vietnamese regulators, local power players, international power producers, developers and operators, multilateral agencies, financiers, investors, and legal experts.

<http://www.euromoneyseminars.com/EventDetails/14345/4062/Vietnam-Power-Summit-2011.html>



## Paris, France

### KPMG Global Power & Utilities Conference

28-29 September 2011

This conference is KPMG's premier event for CEOs, divisional heads and financial executives in the power and utilities sector. The intensive program focuses on strategic, financial, environmental and risk related issues, including related to infrastructure, and providing insight into the tools and strategies to help manage them.

<http://www.kpmgpowerconference.com/>



## Amsterdam, Netherlands

### Global Tax Summit

27-29 June 2011

Tax professionals from around the world participated in the firm's annual Global Europe, Middle East and Africa Tax Summit. Tax implications for infrastructure were a key topic of discussion, including industry trends, indirect and corporate tax rate changes and implications, regulation, and the ways environmental tax can contribute to saving the planet. Videos from the event can be viewed on our website.

[www.kpmg.com/taxviews](http://www.kpmg.com/taxviews)



## London, UK

### Water 2011

11-12 October 2011

KPMG proud lead sponsors for this 12th Annual Conference focusing on efficiency, sustainability and competition in the water sector in the UK. KPMG will lead a discussion on operating in a risk-based regulatory environment.

<http://marketforce.eu.com/Conferences/water11>



## Luanda, Angola

### Private Infrastructure Finance in Angola Conference

6 July 2011

Angola presents new private finance opportunities in infrastructure and KPMG was proud to sponsor of this invitation-only event looking in detail at those opportunities. Additionally the event discussed the new Public Private Partnership (PPP) law in Angola and its regulation and lessons learned from PPP across sub-Saharan Africa. Contact us for additional information:

[infrastructure@kpmg.com](mailto:infrastructure@kpmg.com)



## Santiago, Chile

### Southern Cone Infrastructure Summit

12-13 October 2011

KPMG are sponsors for this event, which is the only executive level Summit focused exclusively on the major energy, transport, water and social infrastructure project challenges and opportunities in the Southern Cone of Latin America.

<http://www.infrastructuresummit.com>

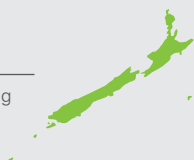


## New Zealand

9 September – 23 October 2011

KPMG New Zealand is the Official Supplier of Accounting and Tax Advisory Services to Rugby World Cup 2011.

[www.insidethebusiness.co.nz](http://www.insidethebusiness.co.nz)



## Lisbon, Portugal

### Global Water and Energy Exchange 2012

7-9 February 2012

KPMG is once again the platinum sponsor for the Global Water and Energy Exchange (WEX). The conference brings together international leaders and decision makers from the water, wastewater and energy sectors at the cutting edge of transforming their industry.

[www.w-e-x.com](http://www.w-e-x.com)



# Bookshelf

A selection from our library of global infrastructure reports and insights. To access these publications, please visit: [www.kpmg.com/infrastructure](http://www.kpmg.com/infrastructure) or email us at: [infrastructure@kpmg.com](mailto:infrastructure@kpmg.com)



## Insight – Issue 1: Infrastructure 2050

In the inaugural issue of *Insight* magazine, we looked at the future of infrastructure and explored why the world must come together to solve the global infrastructure challenge. From project financing in Indonesia to urban transport projects in the UK, *Insight* provides a broad scope of local, regional and global perspectives.



## Project Finance and the Capital Markets

An examination of the barriers to accessing the debt capital markets for project financing, this paper provides a qualitative and quantitative analysis of the potential solutions that are being developed - in particular the product being offered by Hadrian's Wall Capital as compared to the current project finance bank market.



## Financing the growth of your city

A look at alternative financing mechanisms and structures for urban infrastructure financing. These financing options, including Public Private Partnerships (PPP), could help cities gear up to not only meet the challenge of rapid growth but also become global cities with world class infrastructure.



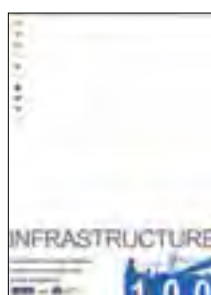
## Power Sector Development in Europe – Lenders' Perspectives 2011

A report highlighting the key findings from a survey of top European banks on the prospects for power infrastructure financing in Europe.



## New nuclear – an economic perspective

This paper discusses the recent events at the Fukushima Nuclear Power Plant. Nuclear power is already playing a substantial role in the decarbonization of the global economy and currently offers the sole cost-comparable, low-carbon alternative to fossil fuels.



## Infrastructure 100

From KPMG and Infrastructure Journal – a look at 100 of the most exciting infrastructure projects underway globally. A distinguished group of judges selected these game changers from hundreds of submissions.



## The green challenge for telecoms

According to some estimates, the Information and Communications Technology sector directly accounts for between 1 and 2 percent of global energy consumption and emissions. This paper reports on the status of responsible low energy design options for the communication sector.



## Success and Failure in Urban Transport Infrastructure

This joint report with University of London College explores the findings of nineteen case studies from cities around the world, including New York, London, Hong Kong, Singapore, Dublin, Bogota, Manila, Manchester, and Bangkok.



## Project Delivery Strategy: Getting it Right

What are the various project delivery options available to owners? What are the factors that might influence the selection of one method over another? This paper explores the options.



## Island economies and their infrastructure: An outlook 2010 and beyond

A first of its kind report on Island Economies, providing a comparative analysis of the state of the infrastructure challenges currently being faced by island economies.



## Reaction Magazine: Fourth Edition

A look at M&A trends from both an emerging market and established market company perspective and examines how M&A activity may change the shape of the global chemical industry over the coming years. We consider current trends in the global construction industry and see how tax efficiency in the supply chain can provide a competitive advantage.



## Agenda Magazine Issue 7

This edition discusses how strategic divestments and rigorous risk management led to the growth and success of GMR, India's market leader in infrastructure development, how the 'Made in China' label is becoming a high-value brand proposition and how the modernization of rural banking can change the investment landscape.



## Construction Risk in New Nuclear Power Projects – Eyes Wide Open

This report draws on KPMG experience advising on new nuclear builds around the world. The report focuses on construction risks and shares examples of models in new nuclear power projects. It also discusses other critical considerations for investors.



## Opportunities in the Indian Defence Sector

A joint study by CII-KPMG reveals the India is upbeat about the opportunities in defence and aerospace, and eager to grow its industrial capabilities in this space, but is looking to government to continue its process of developing and fine-tuning the procurement regime and industry drivers that will enable industry to grow.



## Powering Ahead 2010: An Outlook for Renewable Energy M&A

A report providing an insight into the global M&A activity in renewable energy. The findings are based on a survey of over 250 senior executives active in the renewable energy industry worldwide.



## Rail at High Speed: Doing large deals in a challenging environment

Many countries are preparing and/or implementing high-speed rail projects. This paper shares lessons learned from work performed by KPMG member firms advising Portugal's first high speed rail project.

# KPMG-Economist Intelligence Unit (EIU) Survey Series

During 2009 and 2010, KPMG commissioned a series of surveys with the EIU into issues and the way forward for infrastructure development worldwide. The three resulting surveys show a clear consensus of opinion by business leaders, infrastructure providers and government officials that as infrastructure ages around the world, we are making insufficient investments to protect our future.



## Bridging the Global Infrastructure Gap: Views from the Executive Suite

A survey of 328 C-level executives and board members from 22 countries. The majority of respondents expressed concern about the adequacy, quality and availability of infrastructure to support both their business growth and that of their national economies.



## The Changing Face of Infrastructure: Public Sector Perspectives

A survey of 392 public sector infrastructure policy developers and procurers from 50 countries worldwide. The majority of respondents agree that the politicization of infrastructure priorities and lack of funding are biggest impediments to infrastructure development.



## The Changing Face of Infrastructure: Frontline Views from Private Sector Infrastructure Providers

A survey of 455 executives from 69 countries worldwide. The majority of respondents expressed concern regarding governmental effectiveness inhibiting infrastructure development.



## Adapting to an Uncertain Environment: KPMG Global Construction Survey 2010

Interviews with senior executives from 140 of the world's leading engineering and construction companies provide insights into decision making during this difficult period and future expectations.



## Delivering Water Infrastructure Using Private Finance

We examine the risks and rewards of using private finance to fund water infrastructure, including how municipal governments and potential investors can benefit.



## The Roll-out of Next Generation Networks: Investing for 21st Century Connectivity

A spotlight report on approaches being taken by governments around the world relative to the roll-out of high speed broadband networks.



## Think BRIC! Key considerations of investors targeting the power sectors of the worlds largest emerging economies

A series of publications highlighting major trends and challenges shaping the evolution of the BRICs countries' power sectors over the course of the next decade.

## KPMG and UCL Infrastructure Intelligence Club Series

A series of reports investigating the operational impacts of the use of private finance. Rather than opinion and assertion, these reports offer an objective analysis based on available data.



### Operating Healthcare Infrastructure: Analyzing the Evidence

How does private finance affect hospital operational performance? This report explores the findings of data analysis on the topic.



### PFI in School Building – does it Influence Educational Outcomes?

Our second report further investigating the impact of investment in school building, and the use of private finance, on educational outcomes.

## KPMG's Global Infrastructure Trend Monitor Series

The *Global Infrastructure Trend Monitor* is a series of publications allowing infrastructure investments to be compared across geographies. Our aim in developing the series is to help improve the quality of debate in identifying the geographically attractive markets for infrastructure investment.



### European Transport Edition: Outlook 2008–2012

Spain emerges as a “star” market – both large and expected to grow rapidly. Other smaller markets expected to grow rapidly fast are Bulgaria, Estonia, Iceland, Ireland, Latvia, Lithuania, Poland, Portugal and Romania.



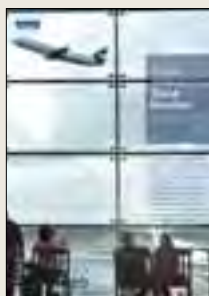
### Indian Healthcare Edition: Outlook 2009–2013

Of the 32 states considered in our research, the six states of Maharashtra, Rajasthan, West Bengal, Uttar Pradesh, Tamil Nadu and Andhra Pradesh are forecast to represent approximately 50 percent of expenditures for the 2009–2013 period.



### North American Roads Edition: Outlook 2009–2013

In Canada - Alberta, British Columbia, Ontario and Quebec are expected to continue to attract nearly 90 percent of Canadian road investment. In Mexico, expenditure is predicted to shrink by an average of 8.6 percent per annum. In the US, California, Florida, and Texas lead in terms of combined public and private investment in road infrastructure and are projected to maintain their dominance through the medium term.



### Southeast Asian Transport Edition: Outlook 2010–2014

Of the 10 nations included in our research, Indonesia, Malaysia, Singapore, and Thailand are forecast to represent over 80 percent of the total cumulative expenditure for the 2010 to 2014 period.



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.

# KPMG's Global Infrastructure practice

**Integrated services.**

**Impartial advice.**

**Industry experience.**

When it comes to infrastructure, KPMG knows 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 our clients to ask the right questions that reflect the challenges they are facing at any stage of the life-cycle 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 practice of highly-experienced professionals (many of whom have held senior infrastructure roles in government) 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 our member firms' clients succeed.

For further information, please visit us online at **[www.kpmg.com/infrastructure](http://www.kpmg.com/infrastructure)** or e-Mail: **[infrastructure@kpmg.com](mailto:infrastructure@kpmg.com)**

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## Ground-breaking thinking

Infrastructure: one of the biggest and most complex challenges of the 21st century. An estimated US\$40 trillion of investment will be needed by 2050 to sustain global growth. Our Global Infrastructure practitioners, on site in 146 countries, advise governments, developers and investors across the lifecycle of projects – from strategy and financing to delivery and hand-back.

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