

ISSUE 5 • June 2014

# URBAN SOLUTIONS

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INTERVIEW

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CASE STUDY

*Singapore*  
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CITY FOCUS

*Suzhou*

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OPINION

*Isher Judge Ahluwalia*  
*Chua Beng Huat*

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SPECIAL ISSUE



WORLD  
CITIES  
SUMMIT

A biannual magazine  
published by

CENTRE for  
**LiveableCities**  
SINGAPORE







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- **Security:** Providing privacy and security with personal freedom and communication capabilities through hardware security and cryptography.



“CleanTech Park, through its Incubator and Accelerator programmes, provides a common platform for cleantech companies and start-ups to meet, discuss, collaborate and undertake viable projects together.”

Mr Edwin Khew  
Chairman of Sustainable Energy  
Association of Singapore (SEAS)



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JTC CleanTech One @ CleanTech Park



Living Atrium at CleanTech One

## The Living Lab Where Innovations and Partnerships Flourish

Developed by JTC Corporation as one of Singapore's living laboratories, CleanTech Park offers itself for the testing of new concepts, development and commercialisation of cutting-edge urban solutions, capitalising on Singapore's experience in systems-level integration. It promotes innovation in the clean technology sector by providing opportunities for collaboration between the academia and industry to test-bed and deploy new sustainable solutions.

One example for such test-bed would be the partnership between Nanyang Technological University (NTU) and Induct Technologies to operate driverless autonomous vehicles to ply the route between NTU and CleanTech Park. With the purpose of accelerating future technologies for earlier deployment to meet Singapore's challenges, this test-bed is the first of its kind in the region and could pave the way for the integration of autonomous vehicles in Singapore's transport system to alleviate transportation issues typically faced by urban cities.

The 1MW fuel cell in JTC CleanTech One for clean energy generation, estate test-bed of LED street lighting, energy efficient chiller systems are among the various test-beds deployed or to be deployed within the park.

One of the first tenants at JTC CleanTech One @ CleanTech Park was energy solutions company, Diamond Energy. Mr Dallan Kay, President and Group CEO of Diamond Energy, shares that, "At CleanTech Park, SMEs have the opportunity to partner with world-class research institutes to advance their development and commercialisation of cleantech solutions such as Demand Response."

Apart from providing space to seed the growth of the local cleantech industry, CleanTech Park is the choice location for companies to host their new test-beds and a lead adopter of new technologies. It embodies the essence of sustainability with its green solutions like estate-wide hydrology system for stormwater management and a smart dashboard system on a district level to monitor the efficiency of buildings and infrastructure.

It is no wonder that there is growing anticipation for the many new urban solutions and sustainable technologies that will undoubtedly flow from this living laboratory.

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### SUSTAINABILITY THEMES



#### Resource Efficiency

- Building solutions to improve resource (energy, water, waste) efficiency
- Clean Energy Generation



#### Sustainable Urban Solutions

- Solutions to mitigate urban challenges (eg. Urban heat, etc)
- Programmes to cultivate greener practices



#### Building Efficiency

- Low/zero maintenance building solution and design

### AWARDS & ACCOLADES

- BCA Green Mark for New Building (Platinum) 2013 – JTC CleanTech Two
- SIA Architectural Design Award (Honourable Mention) – 2013
- Singapore Landscape Architect Awards (Gold Award for Excellence) – 2013
- BCA Green Mark for Districts (Platinum) – 2012
- BCA Green Mark for New Building (Platinum) 2011 – JTC CleanTech One
- BCA – NParks Green Mark for Parks (Platinum) 2011
- IES Prestigious Engineering Achievement Award 2011
- MIPIM Asia Awards 2011 – Best Futura Project (Silver)
- PUB – ABC Water Certification 2010







## LET'S FIND CLEANER SOURCES OF ENERGY TODAY, TO HELP PROTECT HER TOMORROW.

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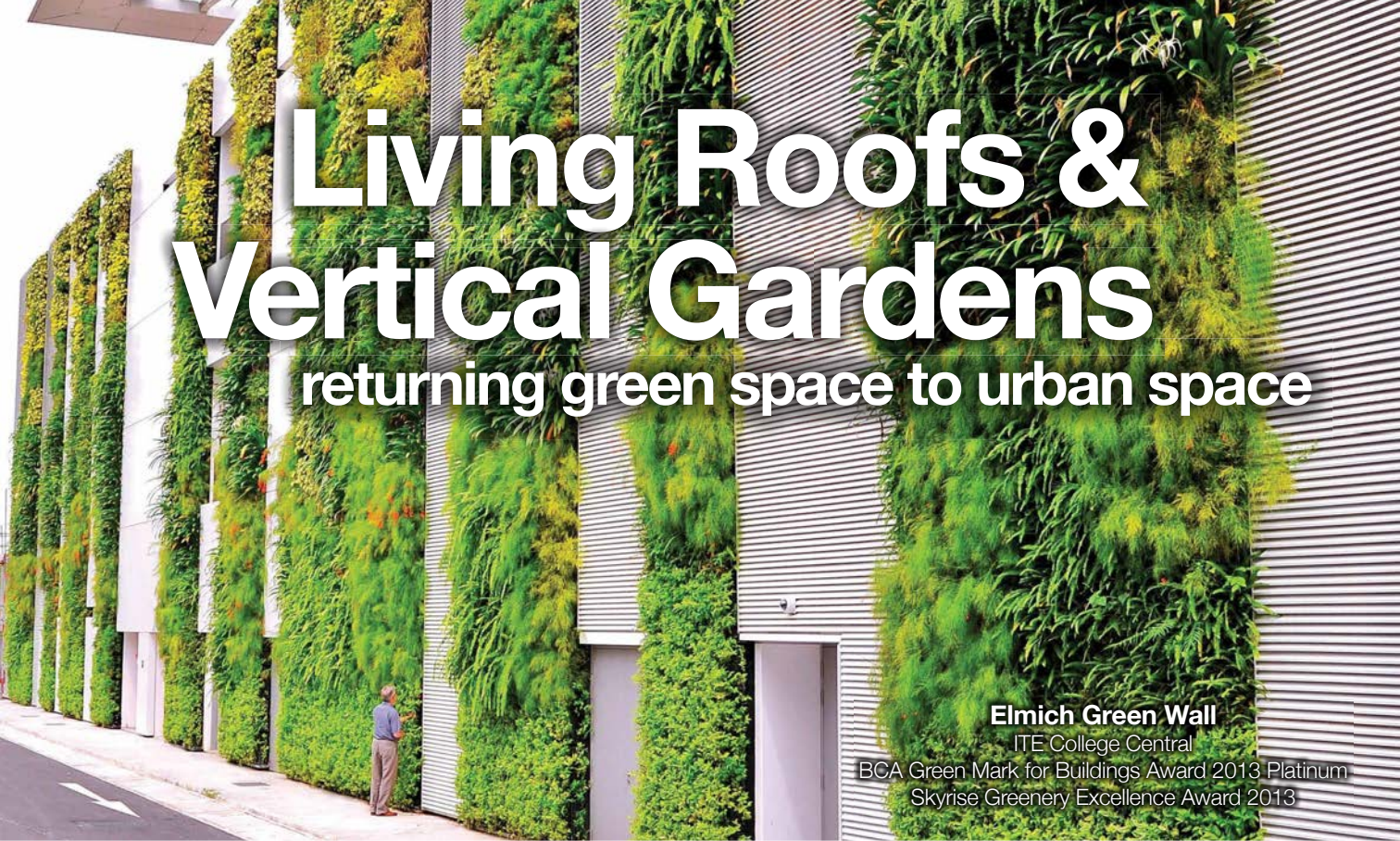


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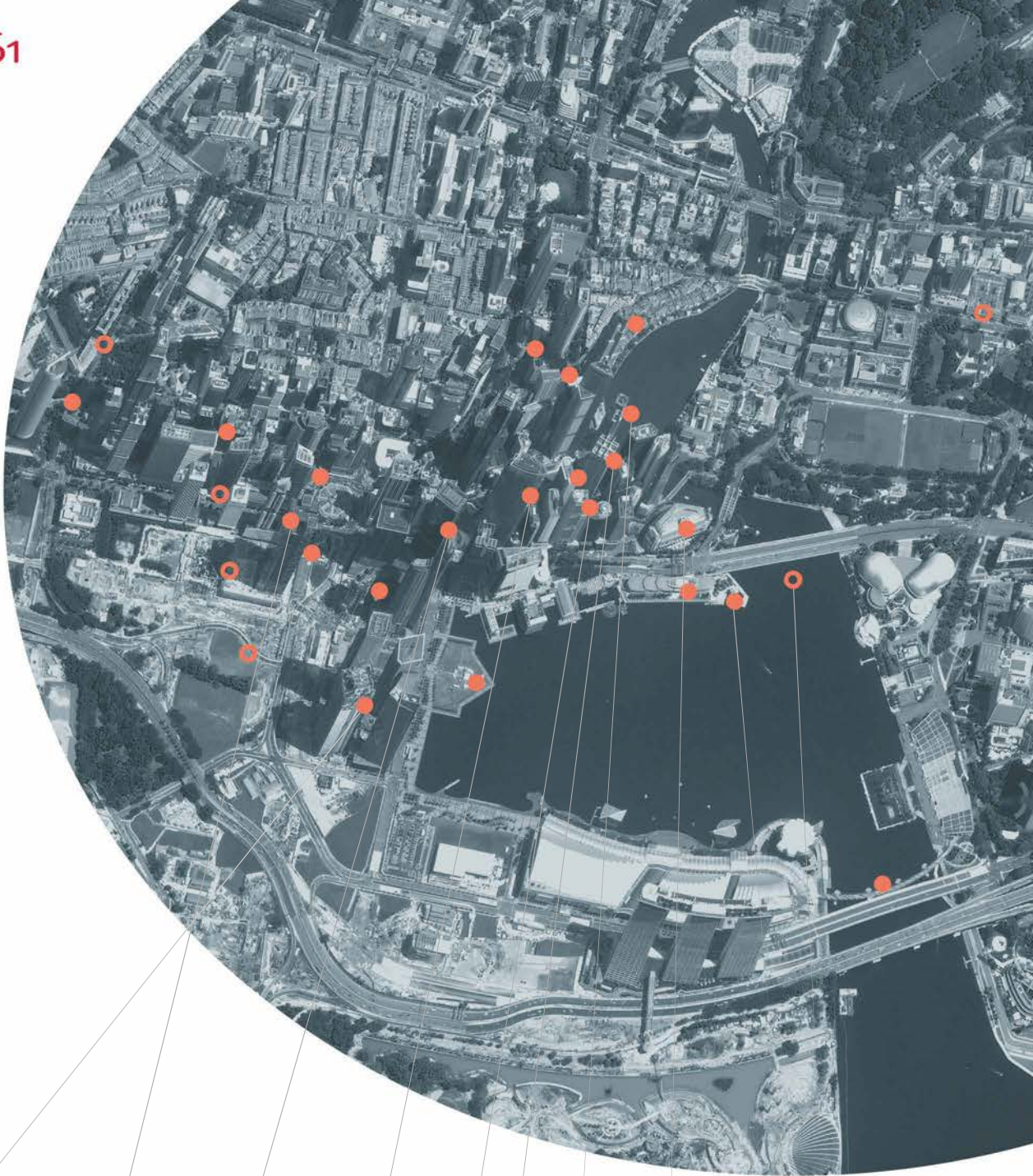
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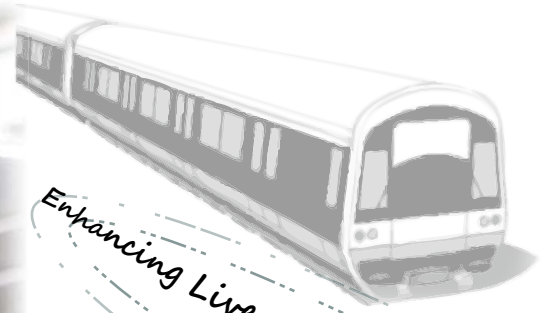
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# CapitaLand in China's Urbanisation Journey

**10%**  
Singapore  
Investment  
in China

According to the China's Ministry of Commerce, Singapore invested US\$733b in China in 2013, making Singapore the country's largest source of investment. As one of the largest foreign real estate investors in China, CapitaLand has invested close to S\$3.9b in China from 2009 to 2013, accounting for 10% of Singapore's investment in China of S\$38.7b during the period. CapitaLand currently owns or manages 145 properties worth over S\$42b in 45 Chinese cities.

**8**  
Raffles City  
Developments

Driven by the trend of high density living and major investments in transport infrastructure, CapitaLand's mixed-use developments near transport nodes have become an optimal urbanisation solution for many Chinese cities. CapitaLand's signature 'Raffles City' brand of mixed-use developments was first launched in Shanghai in 2004. It has since expanded its stable of 'Raffles City' developments to eight spanning a total construction area of over 3.1 million sqm with an estimated value of S\$12b on completion.

**110,000**  
Homes

Since 1994, CapitaLand has built more than 40,000 mass to high-end residential units in China. It has a pipeline of some 70,000 homes and remains committed to address the housing needs of the Chinese population.

**62**  
Shopping Malls

As urbanisation picks up pace in China, CapitaLand's shopping mall business, CapitaMalls Asia, is well poised to meet the rising domestic demand. CapitaMalls Asia is now a leading shopping mall developer, owner and manager in China with over 60 malls spanning a total GFA of about 6.4 million sqm. Its well located and designed malls near transport nodes, cater more towards experiential shopping and customer experience, and are run professionally with clear tenant strategy.

Raffles City Chongqing, China



Urbanisation has been touted as China's next engine of economic growth. It is expected to raise the share of urban residents to almost two-thirds by 2030. CapitaLand, one of Asia's largest real estate developers, has been closely linked to the development of China's business and urban landscape since it entered the market 20 years ago. As the company celebrates this significant milestone in 2014, it has set itself to become a major player in China's urbanisation journey.

CapitaLand's serviced residence arm, The Ascott Limited, which operates the brands Ascott, Citadines and Somerset, is the largest international serviced residence owner-operator in China with 57 properties across 20 cities. Its award-winning hospitality and exceptional track record have enabled it to grow from under 5,000 apartment units in 2009 to more than 10,000 units in 2014, cementing its leadership position in China.

**10,000**  
Serviced  
Residence  
Units

Ensuring funding is an important condition for pushing forward urbanisation. Through financial innovation, CapitaLand has built a diversified and sustainable model – it has now one of the largest real estate fund management businesses in China with assets under management diversified across its multi-sector businesses. The portfolio includes 12 private equity funds and two Singapore-listed REITs – Ascott Residence Trust and CapitaRetail China Trust – that have a strong presence in China.

**14**  
Real Estate  
Funds

CapitaLand recognises that the long-term success of the company's business is closely intertwined with the health of the communities in which it operates. It has donated over S\$9m to promote social development of underprivileged children in China. It has helped build 25 CapitaLand Hope Schools and attracted over 20,000 community volunteers. Over 100,000 underprivileged children in China have benefited from CapitaLand's efforts.

**S\$9m**  
Donation to  
Charities

CapitaLand has set itself to play a vital role in China's urbanisation journey. With a sharper focus in five city clusters: Beijing/Tianjin, Shanghai/Hangzhou/Suzhou/Ningbo, Guangzhou/Shenzhen, Chengdu/Chongqing, and Wuhan, CapitaLand is in an even stronger position to seize opportunities as a group, reap more economies of scale and invest in product innovation. As a long-term investor in China, CapitaLand is committed to creating sustainable value with its quality and innovative real estate products and services.

**5**  
City Clusters

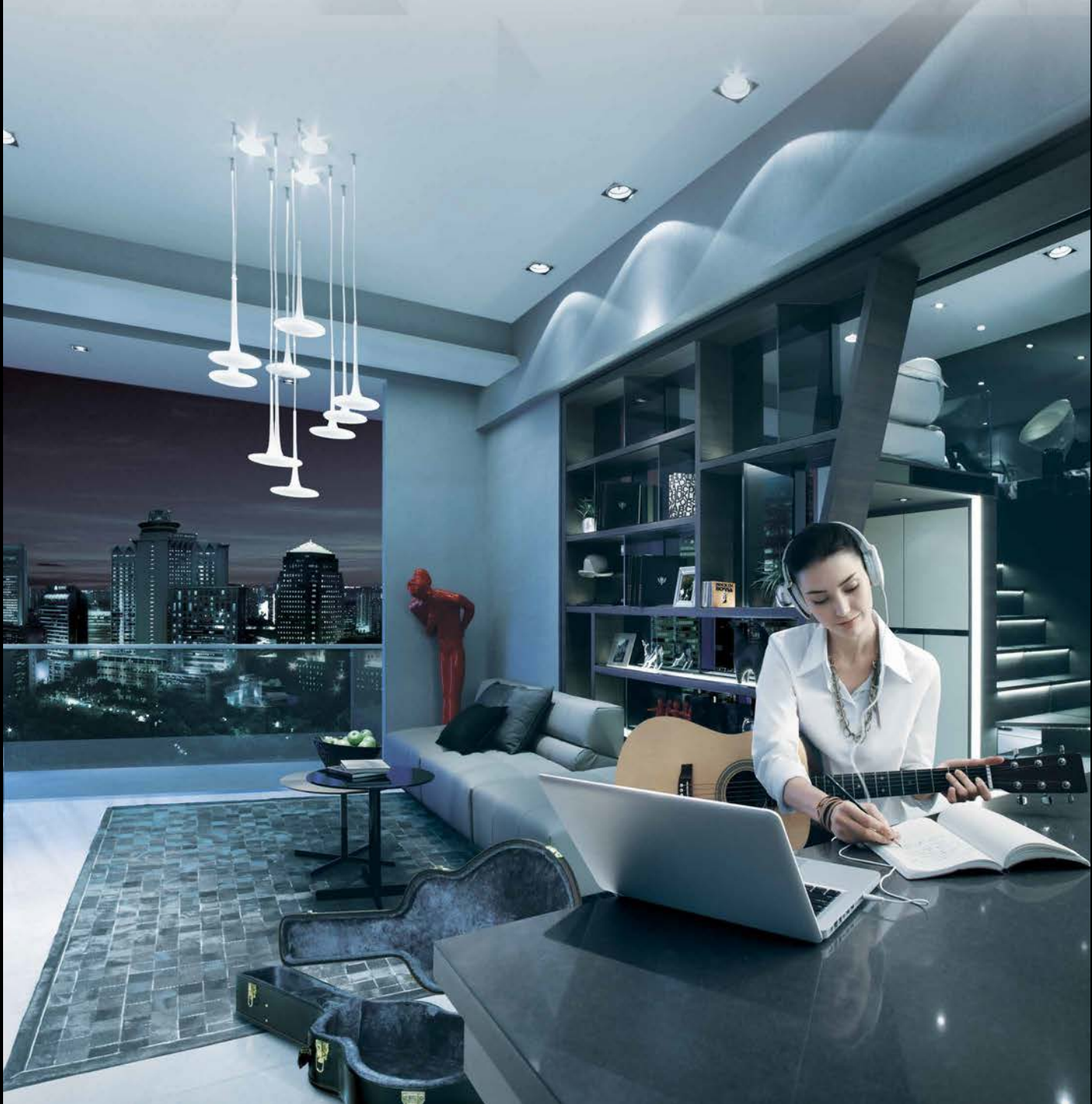
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# SOHO

Space Evolves.

*Artist's Impression*

THE CAPE Developer: Beauty World Properties Pte. Ltd. (197801373D) • Licence no.: C0685 • Tenure: Freehold • Land description: Mk 25 Lot 99778K at Amber Road • Expected vacant possession date: 31 Dec 2015 • Expected legal completion date: 31 Dec 2018 THE SCOTTSTOWER Developer: Far East Success Development Pte. Ltd. & Whitewater Properties Pte. Ltd. (197801286N & 200204488W) • Licence no.: C0296 • Tenure: Leasehold 103 years from 01 October 2010 • Land description: Lots 801K & 782M (now known as Lot 1311T) TS 27 at Cairnhill Road/Scotts Road • Expected vacant possession date: 30 June 2017 • Expected legal completion date: 30 June 2020 THE SIENA Developer: Far East SOHO Pte. Ltd. (201103488D) • Licence no.: C1020 • Tenure: Leasehold 99 years from 28 February 2013 • Land description: Mk 2 Lot 3769P at Farrer Road • Expected vacant possession date: 31 December 2017 • Expected legal completion date: 31 December 2020



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**URBAN SOLUTIONS** is a biannual magazine published by the Centre for Liveable Cities.

E-version: [www.clc.gov.sg/Publications/urbansolutions.htm](http://www.clc.gov.sg/Publications/urbansolutions.htm)

Set up in 2008 by Singapore Ministry of National Development (MND) and the Ministry of Environment and Water Resources, the Centre for Liveable Cities (CLC) has as its mission "to distil, create and share knowledge on liveable and sustainable cities". CLC's work spans three main areas – Research, Capability Development, and Promotions. Through these activities, CLC hopes to provide urban leaders and practitioners with the knowledge and support needed to make our cities better. [www.clc.org.sg](http://www.clc.org.sg)



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Cover: Historic canal in Suzhou, recipient of the Lee Kuan Yew World City Prize 2014.

Photo courtesy of Pingjiang Historic District Preservation & Restoration Co., Ltd.

URBAN SOLUTIONS welcomes feedback from readers.

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**ISSN 2301-3540** (print)

**ISSN 2301-3532** (e-version)

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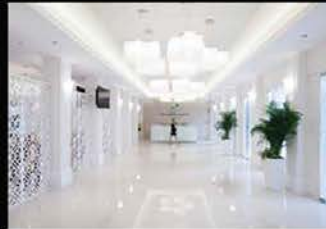
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5. House V
6. Residential Development
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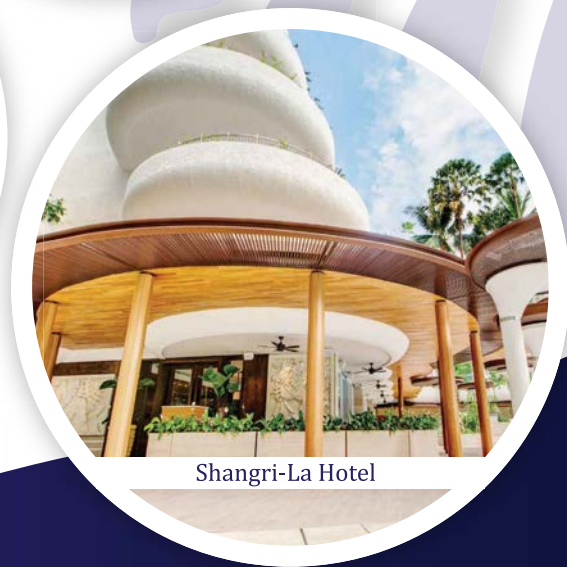
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# From the Executive Director

This special issue of **URBAN SOLUTIONS** focuses on the WORLD CITIES SUMMIT in June 2014 and its theme “Liveable and Sustainable Cities: Common Challenges, Shared Solutions”. We explore major challenges that today’s cities face, and proven solutions from around the world. We also ask how the public, private and people sectors, as well as different cities, can learn from and collaborate with each other.

In our *Interview* with Singapore’s Prime Minister Lee Hsien Loong, the Opening Ceremony Guest of Honour, learn what liveability means personally to him, and what he thinks Singapore can learn from others. In another *Interview*, UK Minister of State for Cities and the Constitution and Summit plenary speaker Greg Clark calls for cities to “lead from the front”, and explains how Britain is pioneering “City Deals” to enable this.

A highlight of the Summit is the LEE KUAN YEW WORLD CITY PRIZE, and our *City Focus* section spotlights this year’s laureate, the beautiful city of Suzhou. The two Special Mention cities – Yokohama and Medellín – are also profiled in our *Case Study* section, alongside Singapore studies that showcase collaboration within and across the public and people sectors.

An *Essay* by Centre for Liveable Cities (CLC) researchers, analysing how cities overcome their challenges to achieve advances in liveability, is adapted from their chapter in a new book on the CLC Liveability Framework that we will launch at the Summit. Elsewhere, plenary speaker Jeremy Bentham draws on Shell’s research with CLC and others to advocate resource-efficient compact cities, and how dynamic governance can enable their development. In another *Essay*, Peter Lacy and Ynse de Boer reveal urgent findings from the *UN Global*

*Compact-Accenture CEO Study on Sustainability*, and propose a seven-step roadmap for effective action.

Finally, our *Opinion* section interrogates the Summit’s theme of “shared solutions”. Indian urban expert Dr Isher Ahluwalia, who is a Summit speaker and a recent CLC Visiting Fellow, persuasively makes the case that it is both possible and important for cities to share and learn from each other. Eminent Singaporean sociologist Professor Chua Beng Huat then provides a provocative and necessary counterpoint – highlighting the serious, and occasionally comic, limits to such sharing.

Whatever your geographical, organisational or ideological background, we welcome all of you in the business of urban planning, development and governance to join us – at the WORLD CITIES SUMMIT or here in **URBAN SOLUTIONS** – as we learn from, and inspire, each other to keep doing better.

---

**Khoo Teng Chye**  
Executive Director  
*Centre for Liveable Cities*



# MAYORS OF THE WORLD, MAY WE

With 3.3 billion people living in cities today—a number that will double by 2050—the job of mayor has begun to resemble the burden of Atlas. City infrastructure, agencies, services, economics and the well-being of the citizenry all demand change.

In bold reaction, city leaders are moving beyond policy-based decisions of the past and reshaping their cities with evidence-based decisions, grounded in data with insights from analytics. Resources can be coordinated, problems anticipated and information integrated, which means cities can get smarter, faster.

## A TALE OF TWO CITIES.

Eduardo Paes, mayor of Rio de Janeiro, goes to work mindful of 6.3 million people. Integrating information from the city's more than 30 public agencies is critical, especially with a rainy season that floods the infrastructure, imperils citizens and drains the city of millions of dollars. Interconnecting the city's data with an Intelligent Operations



*Data from an Intelligent Operations Center improves the response times of Rio's emergency agencies by 30%.*



*The key to the city isn't a key, it's data.*

# KINDLY HAVE 327 WORDS WITH YOU?

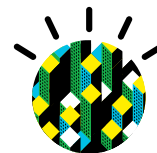
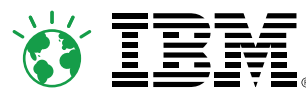
Center now helps create a single, real-time view of its infrastructure, resulting in new levels of safety and coordination. Today, reaction times of public response operations have improved by 30%.

China has 25 million cars, and that number grows by 25% every year. One effort to relieve the pressure on the infrastructure is “Smarter

Zhenjiang, Smarter Tourism,” a project to support that city's economic development and quality of life with plans to replace and upgrade vehicles and stations. An Intelligent Operations Center will help Zhenjiang analyze traffic patterns, provide its commuters with real-time information, minimize disruptions to public transportation service and alleviate gridlock.

industries, state and city lines. So now you know our agenda: to help you make your city smarter, faster. Get started at [ibm.com/cities](http://ibm.com/cities)

LET'S BUILD A SMARTER PLANET.



## CHANGE RUNS THROUGH CITY HALL.

Citizens want to be surrounded by innovations and technologies that bring transformation and real progress.



*There are now 25 million cars in China, and that number is increasing at the rate of 25% every year.*

And they expect to have a voice in the process. Drawing on deep insights from thousands of Smarter Cities projects, IBM is helping mayors around the world become dynamic innovators while empowering more collaborative working relationships across businesses,



Singapore

# Lee Hsien Loong

FULFILLING

THE HUMAN SPIRIT

**I**n this interview on 3 April 2014 with Executive Director Khoo Teng Chye and Koh Buck Song of the Centre for Liveable Cities, Singapore Prime Minister **Lee Hsien Loong** gives his take on urban liveability and describes his hopes for his country 100 years ahead. He also reveals which other cities he looks to, and what tips Singapore might offer on sustaining a liveable city that meets everyday needs while also fulfilling the human spirit.



*You must be able to play well – which means a green environment, and opportunities for leisure, culture, the human spirit.*

● **Of all the many aspects of liveability, which are the ones really close to your heart?**

A liveable city is a place where people can live, work and play, and fulfil the human spirit. You want to be able to live well – good homes, good neighbourhoods, orderly and safe streets and environment. You must be able to work well – there must be jobs, opportunities, economic growth. You must be able to play well – which means a green environment, and opportunities for leisure, culture, the human spirit. To bring them all together, you must have the governance to make the “big software” work, to pull it all together so that when people come to this place, they say: “Yes, I want to be here.”









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● **Does the fact that Singapore has a dense urban environment as well as lots of greenery give you a different perspective on the major concerns in the world today on enhancing the liveability of cities?**

Our problems are easier because we are a city in a country, and the country is surrounded by water. It's a controlled environment. If we decide to do something, we can make it happen in all of Singapore.

The other side of it is that in Singapore, the city is what we have. You can go off on weekends somewhere else, but it's some other country already. That makes it more important for us than other countries that we make Singapore a liveable city.

● **What are the adjustments in governance which Singapore needs to make to meet future challenges?**

Population is a long-term issue. But we must also tackle more immediate issues. People need housing, public transport, utilities working well, jobs, and to have their economic needs seen to. If you plan in isolation, population goes one way and your infrastructure goes another way, you'll have a problem. Even if you plan together, it's not easy because of very different timescales. Population or economic trends can go up and down very quickly. Foreign workers can come and leave. To build a new city, one needs 20–30 years to reclaim the land, and you want to create possibilities so that your successors

01 Mr and Mrs Lee dancing with members of the Country Line Dance Association Singapore, whom they encountered while walking around Marina Bay in December 2013.

02 Mr Lee at the National Museum of Singapore, during Singapore HeritageFest 2013.

● **Is there a personal anecdote, something that really struck you in your early life or career, that comes close to the heart of liveability?**

I often spend my holidays in Singapore, walking around Marina Bay, our nature reserves, MacRitchie Park, and I'll often find something new, a corner of Singapore I haven't been. I particularly like the park connectors, which we are still building. My wife and I once walked all the way down the Kallang River from Bishan-Ang Mo Kio Park to Marina Bay. It's quite a long walk but very interesting. It's urban, but at the same time, we have the greenery and water. I don't think many cities can contrive that.



will have choices. That means you need very competent people, and a lot of information – “big data” – and you must be able to pull it all together to make sense of the data and to respond to it, in real time or strategically over the long term.

● **What is your vision and dream for Singapore, say, 100 years into the future? How would you describe Singapore at that time?**

You cannot imagine what the world will be like 100 years from now. I hope Singapore will still be a country which is prospering, at peace with its neighbours, modern and yet maintaining a history of where it came from. A historic city must have many layers. If it is all built at once, like some of the synthetic planned capital cities, it will lack that richness and depth. But if it grows over the years – you have Chinatown, pre-war flats from the Singapore Improvement Trust period, Housing & Development Board new towns and public buildings reflecting different periods in history – I think that is a city you can explore and savour, and which will hold many memories for the population.

● **Are the softer aspects of liveability becoming more important?**

Yes, certainly. It is a continuing trade-off because you can't live in a museum, frozen in time. You want pieces of the past preserved, upgraded or adapted to new uses so you can look at them and say: “It's the same, yet different.” We're doing that to the City Hall and the former Supreme Court building – putting them to a new use, turning them into the National Gallery. The National Museum [of Singapore] is restored very beautifully in front. If you go behind, you see the modern extension integrated harmoniously into the old building. We can't fix everything in place, and we can't say that no tree once grown will ever be cut down, but we want to keep in Singapore a good mix of history, of the past and present.

○○  
*We want to keep in Singapore a good mix of history, of the past and present.*

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● **What is your take on a case like redeveloping the Bukit Brown Cemetery? Is it a sacrifice we have to make along the way?**

The Bukit Brown NGOs [non-governmental organisations] are pressing for preservation, and I respect their point of view, but I think in Singapore, we have to make choices. We've done it in Bishan, which used to be a large cemetery, and today we have a very vibrant town. Even along Orchard Road – if you're old enough, you remember that we used to have Ngee Ann Kongsi graves. They're all gone now. Would we have been better off if we had kept all those as cemeteries, and then squeezed our city into little plots of land in between? I don't think so. It's painful; we have to adjust, to give something up.

Today, you can keep a significant part of such history in virtual form – you can record all the graves, have a 3-D computer model, a virtual tour. We should also make the effort so that some significant bits are preserved and integrated into the new development so people know what was there before. I think that's necessary. It's important to have young people learn something about their own history.

● **Are there cities around the world that you look to?**

I think that cities like New York, even Seoul, their city management is in many respects more advanced than ours. When Michael Bloomberg was Mayor of New York, he made an enormous effort to upgrade the city services, making sure the maintenance was well done, the schools all up to scratch, and the neighbourhoods safe; and monitoring the city with a network of sensors and cameras, with information coming in so you know if there is a flood, an accident or fire, what the status is, so you can react.

We don't have a similar city control room in Singapore, and we can do a lot better. Video cameras today are so cheap, you can connect them up easily via the Internet, you've got 4G everywhere. We should be able to put them all over, in public places, so when something happens we don't have to scramble. In Little India, when the riot took place last year, we didn't have enough cameras, and we were looking on YouTube and the Internet to see what people had posted.



*When people see a hole in the road...there should be an app that lets them just upload the information by smartphone.*



When people see a hole in the road, a light not working, an accident, there should be an app that lets them upload the information by smartphone. Someone will sift through all this information, and react promptly to fix the problem. If you can harness the population in this way, you get a much better response and the population will feel much more engaged.

● **Is there a top-of-mind example for you from other cities on softer aspects such as heritage?**

Suzhou has become a [UNESCO] World Heritage Site; they are this year's winner of the LEE KUAN YEW WORLD CITY PRIZE. I have visited Suzhou over the last 20 years and seen the great changes in the city. They have systematically upgraded their city. They've moved some

of the population out so it's not so crowded; they've cleaned up the river that surrounded the city, so now you can sail on it. They've cleared up the slums, and the behaviour of the people has changed. Now you've got Starbucks-type places. People dress up and go out, and there are many cultural amenities. They built a new cultural centre outside the city on Jinji Lake, in the Suzhou Industrial Park. It's a remarkable transformation.

I think Singapore helped to start it moving, because we built the Industrial Park, and that got investments in and gave them some revenues. Also, it opened a window for them on the world. The degree to which the Suzhou population now is connected to the world was unimaginable 20 years ago. They know what's happening; they travel.

01 Mr Lee (right) with CLC Executive Director Khoo Teng Chye at the URBAN SOLUTIONS interview.

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● **When people from around the world ask you what tips they can pick up from Singapore, what do you tell them?**

I tell them I'm just solving my own problems in Singapore. It may be interesting to you; come take a look. If you think it's relevant, we are happy to share the knowledge because there are no secrets in these matters.

That's what we did in Suzhou. We went, we tried to build an industrial park that also included housing, infrastructure, urban development, commercial areas, as well as industrial estates, which would bring in investments. It was not that we were teaching a class and disciples took notes. This was a model which was working, and other officials, mayors, party secretaries came from all over China. They took a close look, took inspiration, went back to their own cities and provinces, and now there are industrial parks all over China. I think they all picked up something from what they saw in Suzhou.



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● **What do you think is the biggest challenge to enhancing liveability in the future?**

We are, in Singapore, just a city in one country. And the country is the city. We have to keep this city up there, at the same standard as the great cities in the world. That means you have to keep on maintaining a very high standard of performance – not just the government, but also the population; to be able to work together and make the system work. Then you can raise standards gradually, and the level will continually improve, year by year, step by step.

01 Mr Lee visiting the China-Singapore Suzhou Industrial Park in September 2010.



*We are happy to share the knowledge... That's what we did in Suzhou.*



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UK Minister of State for Cabinet Office (Cities and Constitution), Greg Clark.





United  
Kingdom

# Greg Clark

DEVOLUTION IS THE SOLUTION

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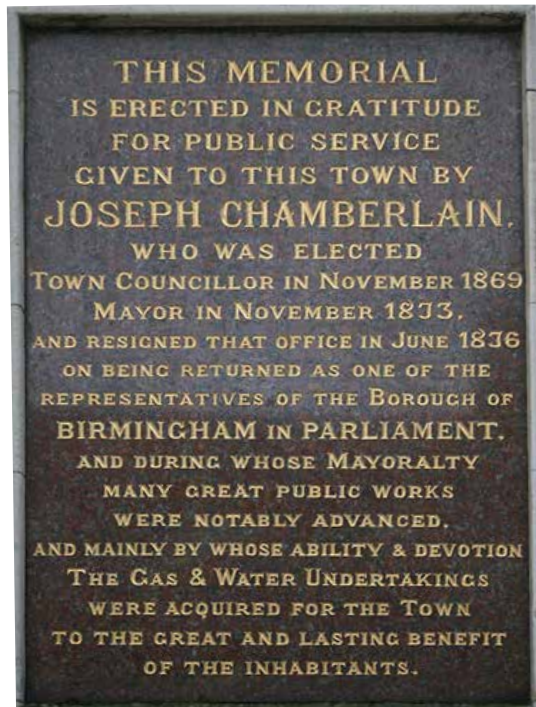
interview

**T**he Rt Hon **Greg Clark** MP has been the United Kingdom's Minister of State for Cabinet Office (Cities and Constitution) since October 2013, and the Conservative Member of Parliament for Royal Tunbridge Wells since 2005. Before he became MP, he was Director of Policy for the Conservative Party. Mr Clark was born in Middlesbrough and studied economics at Cambridge before getting his PhD from the London School of Economics. In this interview with **URBAN SOLUTIONS**, he talks about the UK government's process of decentralisation to give cities more autonomy to shape their future.

● **What are the two or three most pressing challenges facing the world's cities today?**

Given the economic crisis that the world is still recovering from, I think the first challenge has to be the economy. The battle for growth – for each country's economic future – will be won or lost in cities. One of the ways in which cities can offer a comparative advantage is in the ability to cope with complexity. According to the Harvard economist Ricardo Hausmann, "The difference in wealth and income between nations is closely related to the ability of firms to take on complex tasks." Hausmann notes that in America, the average employee collaborates in some way with 100 co-workers while in India, the equivalent figure is just four.

Cities are engines of complexity: their *raison d'être* is to facilitate human interaction to a degree that would not be possible anywhere



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else. A city that succeeds will have a faster exchange of money, information, ideas and all the other interactions that fuel a civic dynamism.

The second challenge has to be sustainability – and not just in the environmental sense. It's about preparing for and dealing with change: accommodating rising populations; resilience in the face of events; the globalisation of supply chains and that role of place in that system. This has been good for some cities – especially centres of global trade, but bad for others – particularly centres of industries where competitive advantage has moved elsewhere. All of these can be a shock to urban residents, who have seen their lives become more uncertain.

01 A memorial plaque commemorating Birmingham Mayor Joseph Chamberlain's critical leadership.

02 Cities like Manchester have had to adjust as industries have moved elsewhere.

These challenges call for leadership. Nineteenth-century Britain was the birthplace of the modern city, with the rise of great leaders like Joseph Chamberlain in Birmingham charting a course for his city and not waiting on national government to provide the answer. We need to rediscover that spirit, where cities, in Britain and elsewhere, lead from the front, harnessing their dynamism and providing stable direction in the face of change. The city is one of the rising forces of the 21st century. I want all our cities to be thriving places, living up to their full economic potential, matching growth with greener ways of living and doing business. When our cities do well, our countries do well.

● **What is the strategic value of the WORLD CITIES SUMMIT in addressing such challenges?**

The role of policymakers is to provide the best possible conditions for those who innovate – the entrepreneurs, artists, scientists and technicians – to create new products and generate employment for all. For cities, the highest priority must be to attract these innovators – to become the place where the most mobile and dynamic people in the world choose to live and work. In doing so, the challenges facing our cities is to combine their two great advantages: complexity and proximity. Doing this successfully surely requires an in-depth knowledge of the people and places each city brings together. The Summit provides a good platform to learn from one of the best at this –



Singapore – while also being able to share and learn from the experience of other cities.

Cities are not islands; they function within national and, indeed, international systems of cities. At home I am the sponsor of the Future of Cities project that is taking a long look at these dynamics to see where UK cities will be in 25 and 50 years. The Summit will allow cities in Britain and elsewhere to get a sense of their place in the global system – what they can contribute and where they fit in. The Summit will allow cities to make their own linkages, allowing them to make their own responses to shared challenges.

There is also the issue of profile – getting people everywhere to know where you are, who you are and what you stand for. The Summit is one for global city leaders – civic champions who have made a mark in and beyond their place – as well as for cities to stand up and share with others their solutions and successes. Cities can be very competitive with each other.

● **In Britain, the national government is granting more autonomy to local leaders to develop their cities. Which areas of development do you think city leaders should take over, and why?**

The answer to that will depend on the place and the context. In Britain over the past couple of years, we have launched a series of “City Deals” – city-led devolution initiatives.



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*For cities, the highest priority must be to...become the place where the most mobile and dynamic people in the world choose to live and work.*

In many ways, this turns the established order on its head, but this is as it should be. To attract entrepreneurs to our cities, city leaders must themselves be entrepreneurial, acting proactively to constantly improve the liveability and workability of their communities. They must come, not as supplicants as in the past, but as equal participants in an open and constructive deal-making process.

Many of our cities have struggled with long-term challenges, both social and economic. After the long, slow decline of the mid-20th century, many of England's cities have begun to take real steps forward, of their own accord. They're recognising that instead of only developing and improving downtown city centres, they need to recognise how cities really work by observing the flow of people, jobs, ideas and income between the centre (or centres) and the periphery. Forward-thinking leaders are already facing up to the urban challenge, making their cities places where people want to live, work, shop and play.



*To attract entrepreneurs to our cities, city leaders must themselves be entrepreneurial...to constantly improve the liveability and workability of their communities.*

This is why we are not being prescriptive on what powers or areas of development cities should take over; it is up to them.

● **What can the UK government do to give greater autonomy to local cities?**

Having inherited the legacy of decades of centralisation, the UK government has had to drive the process of decentralisation from the centre. By definition, only those that have power can give it away. But with the progressive empowerment of our communities, we need to think about decentralisation in a very different way. In particular, cities should have an ever bigger part to play in shaping the process of change.





City leaders should be able to put forward their own proposals, and they have to develop for themselves the talent and capacity to take those proposals forward.

It goes back to what I said earlier about leadership – leadership counts. Nations, corporations, teams, schools, cities – all can be well led or poorly led. And in each case it makes a big difference whether they are or not. In helping our cities to flourish, it seems to me we should do what we can to improve the rewards to strong leadership; this does not guarantee success – but it helps. Strong, visible, accountable leadership is key; those leaders need to be able to set a vision for their city – one that is distinctive. It’s self-evident to us that what’s good for Liverpool isn’t necessarily good for Glasgow, and we have to recognise those differences. Each city has different strengths and weaknesses, and development strategies should be tailored according to their strengths.



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● **Could you give one or two examples of how the national government has worked with city leaders to harness their cities’ potential?**

Manchester – home to both the world’s first commercial railway and the first canal, essential elements in the movement of goods and people – has pioneered a huge step forward in our devolution agenda. At the heart of this deal is a £1.2 billion (US\$2 billion) revolving Infrastructure Fund to drive growth, coupled with a formula that allows the city to “earn back” a portion of the increased tax revenue generated from that growth. This will enable the city to shape its own future, with an innovative approach to economic investment that has transformed the city’s incentive to grow.



*Strong, visible, accountable leadership is key; those leaders need to be able to set a vision for their city...*

01 Mr Clark and UK Prime Minister David Cameron meeting with Local Enterprise Partnership Chairs in Manchester.

02 Manchester’s “City Deal” involves innovative financing for urban infrastructure.



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Sheffield – the city of steel – is taking forward a new approach to skills, allowing city officials to tailor provision to the needs of the city rather than to what people hundreds of miles away in the capital specify as the needs of the nation. They created a local skills funding model, addressing local skills gaps in key growth sectors such as advanced manufacturing. The city will use a pooled budget to invest in skills and to incentivise colleges and providers to respond quickly and flexibly to emerging

needs of key sectors. Sheffield City Region’s Skills for Growth and Employment Partnership enables business leaders, skills providers and local authorities to oversee the delivery of adult training and apprenticeship for employees in the region. These are freedoms and flexibilities that cities have been crying out for a generation or more, at long last within their grasp. I believe we have enabled cities such as these to realise their potential by letting them articulate their own needs and aspirations, and putting power in their hands.

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01 Sheffield’s Skills for Growth and Employment Partnership facilitates adult training and apprenticeships.





# The Future of Singapore: World's Smartest City

**Singapore's objective is clear. It aspires to be—and in many ways already is—the smartest, most innovative and sustainable city on the planet. Singapore is also one of the world's safest urban environments, and it intends to stay that way.**

Anticipating new safety and operational challenges, Singapore is turning its attention to enhanced situational awareness, and capitalizing on the prevalence of sensors and their interconnectivity commonly known as the Internet of Things.

Steadily since its independence, the government of Singapore has actualized ambitious plans to reduce traffic and human congestion, safeguard vital installations and improve quality of life for its citizens.

Now it has partnered with the consortium of AGT International, Hitachi and O'Connor's to testbed a multi-agency, intelligent analytics solution that will enhance Singapore's ability to protect

its citizens, critical assets and infrastructure, all while improving operational efficiency.

Dubbed CityMIND, the solution connects and integrates data from a range of sources, including behavioral recognition sensors, social media intelligence (WEBINT), urban unmanned aerial vehicles (UUAVs), smart environmental



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**CityMIND delivers real-time situational awareness to relevant government agencies**

sensors and citizens' smart phones. Applying advanced analytics, CityMIND delivers real-time situational information to all relevant government agencies, alerting them to unusual behaviors and events, and arming them with the necessary information to take swift action in response to a multitude of incidents and daily occurrences typical of a complex city.

# Draft Master Plan 2013

Singapore



## ENVISIONING A GREAT CITY

**T**he Draft Master Plan 2013 is Singapore's latest blueprint for development over the next 10 – 15 years. Urban Redevelopment Authority Chief Planner **Lim Eng Hwee** explains it is the result of close inter-agency collaboration to support a vibrant economy and create a green, healthy and connected city for its residents.



01 With population growth, Singapore planners face new challenges, like strains on urban infrastructure.



## The Challenge

In January 2013, the Singapore government released its White Paper on Population, highlighting the challenge of a shrinking and ageing resident population and the need to supplement it in order to sustain reasonable economic growth.

Accompanying this White Paper was the Land Use Plan, which outlined broad strategies to support a population scenario of up to 6.9 million. Some of these strategies – development of our land reserves, land reclamation and redevelopment of low-intensity land uses – address enduring challenges such as land scarcity and growing land demand.

Now there are new significant challenges, including a diminishing land bank, rapid urbanisation and intensification, strain on our public transport system and other infrastructure, and the public's increasing desire to have a say in how we develop our future. For planners, these new challenges require innovative urban solutions that provide for a quality living environment while retaining Singapore's unique social fabric and cultural roots.





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## The Solution

With the last Master Plan review undertaken in 2008, it was imperative that the latest Master Plan Review responded to the potential demographic challenges faced going forward. Building on the strategies of the Land Use Plan, the Urban Redevelopment Authority (URA) released the Draft Master Plan 2013 (DMP13) last year with the aim of striking a good balance in supporting growth while continuing to improve the lives of residents and future generations.

As a statutory land use plan, the Master Plan is reviewed every five years to accommodate changing needs and demand. It is also an important strategic platform for the coordination of the work of our development agencies to ensure that the necessary infrastructure will be provided to adequately support existing and new developments.

On 20 November 2013, the URA exhibited the DMP13 for public feedback. Themed “Our Future, Our Home”, the exhibition

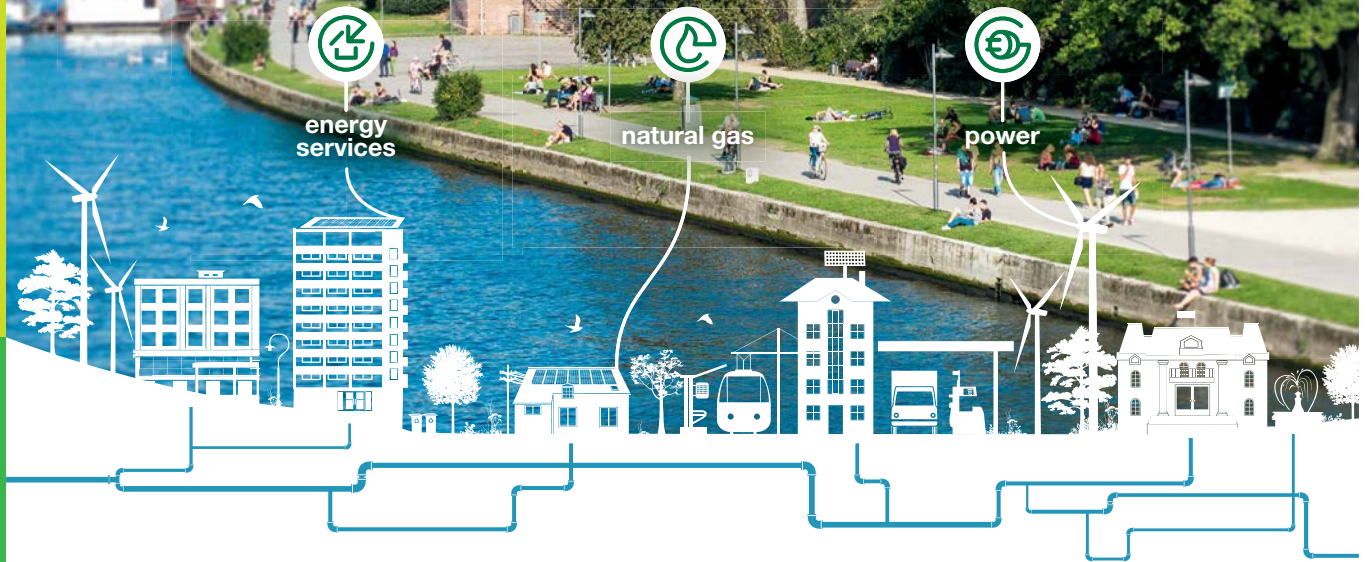
envisioned the DMP13 as people-centric and relevant to the everyday concerns of residents. While the plan caters for the needs over the next 10-15 years, the exhibition highlighted development plans over the next five years. The Master Plan focused our strategies in six key areas: Housing, Economy, Transport, Recreation, Identity and Public Spaces.

New housing areas will be opened up. The public can expect a variety of living options, including homes closer to nature (Bidadari), more waterfront precincts (Punggol Matilda), and even new car-reduced housing areas (Kampong Bugis, Marina South). Towns will also be more walkable, with amenities close to homes and more one-stop community hubs. Public spaces will also double-up as social areas to facilitate community bonding and ageing-in-place. As older towns rejuvenate, their unique heritage elements will be retained.

01 An artist's impression of high-density yet highly liveable and car-reduced housing in Marina South.



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Singapore, Rio de Janeiro, Santiago de Chile, London, Bordeaux, Barcelona, Angoulême, Balma, Casablanca, Amsterdam, Tianjin and more, have already involved **GDF SUEZ** in their urban **renovation projects**.





Sufficient land has been safeguarded to grow the economy while bringing jobs closer to home. While the Central Business District will continue to be the heart of Singapore’s financial sector, new regional employment centres and growth areas (e.g., the North Coast Innovation Corridor) are strategically distributed islandwide as part of an overall decentralisation strategy to ease traffic flows into the city centre.

In public transport, more integrated transport hubs for seamless transfers and an extended network of covered linkways have been planned to enhance the comfort and convenience of commute. The rail network is also set to double. In addition, the National Cycling Plan aims to grow the cycling route network, improve the cycling infrastructure to further enhance mobility and encourage an active lifestyle.

Access to recreation and greenery is an important aspect of a quality life. More parks will be introduced near homes, including a continuous 25-kilometre Green Corridor along the former railway land, and a 150-kilometre linear park that loops along the coast round the island. More waterways will be progressively opened up for public enjoyment, and more nature areas (Jalan Gemala, Beting Bronok and Pulau Unum) have been identified to safeguard Singapore’s biodiversity. New and upgrading of town and regional sports centres have been planned for by 2030, while more school sports facilities will be opened up for public use.

As Singapore develops, familiar surroundings and landmarks have become markers of identity for residents and need to be conserved. More than 70 buildings will be conserved under the DMP13,





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adding to the over 7,100 buildings already protected. Three new Identity Nodes – Holland Village, Jalan Kayu and Serangoon Garden – have been recognised. In addition, new heritage trails in various estates will be developed by 2014, including a heritage walk as part of the future Bidadari Estate.

Finally, more public spaces will be set aside for community spaces that would help create new shared memories. Hence the URA launched “PubliCity”, an initiative that involves the community to celebrate meaningful public spaces and enlivens public spaces through good design and programmes. For instance, the rejuvenation of the Civic District will result in a more pedestrian-friendly precinct with elegant street furniture and extensive public spaces.

A calibrated communications plan was adopted for the DMP13. Together with relevant partner agencies, extensive public engagement sessions were held with Members of Parliament, key

stakeholders and interest groups to get early feedback and buy-in from the local community on some of the key development proposals.

For sensitive areas, plans were presented in greater detail with care taken to explain the planning approach to mitigate potential concerns. We also developed 26 Planning Area Brochures for towns with residential areas. These brochures gave residents a more intimate understanding of how the DMP13 strategies would translate into immediate development plans at the local level.

01 Recreation and greenery improve liveability and mitigate urban stress.

02 An artist’s impression of a more pedestrian-friendly Queen Street in the Civic District.

03 Early feedback and support were sought from interest groups like this cycling focus group.



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## The Outcome

The DMP13 exhibition was well received by both the public and private sectors. Nearly 71,000 visited the exhibition with about 1,500 surveys completed, most of which were complimentary about the plan and its presentation. The dedicated DMP13 website was also popular with some 158,000 visits and about 611,000 page views. About 20,000 copies of the Planning Area Brochures were downloaded. The public submitted about 400 written suggestions. All the feedback received were studied carefully for refinement of the DMP13 before it was to be gazetted by mid-2014.

Building on this strong support and interest, the URA and other agencies will now aim to roll out the following projected tangible outcomes.

By 2030, at least eight in 10 households will be within a 10-minute walk to an MRT station because of the doubling of the rail network, and more than 90% of households will live within 400 metres of a park because of more parkland and enhanced accessibility to green spaces. We would be able to support future growth yet maintain a good quality of living environment.

These outcomes would only be possible with close collaboration between public agencies and the community to make Singapore a great city to live, work and play in.



**Lim Eng Hwee** is Chief Planner and Deputy Chief Executive Officer of the URA. He has extensive experience in urban planning, urban design, and implementation of land use policies and development initiatives. Mr Lim graduated with a Bachelor of Planning from the University of Auckland in 1989 and a Master in Public Administration from Harvard University in 1997.



01 Singapore Prime Minister Lee Hsien Loong and grassroots activists at the exhibition; DMP13 implementation builds on support and feedback received at such engagement platforms.



# AUCKLAND CITY ENHANCES PUBLIC TRANSPORTATION SERVICES

| By Roger Jones



## The Challenge

Auckland, New Zealand's largest city with a population of 1.4 million, needed to upgrade its transportation network to prepare for its booming population. Its old and disjointed transportation system was barely meeting the needs of current citizens and would not be able to withstand an expected doubling of the population by 2040.

To be ready for this growth, provide integrated transport solutions and to boost Auckland's global competitiveness, Auckland created a 'super city'. A new organisation, Auckland Transport, was set up in 2010 through a merger of eight Auckland-local area councils. It merged the transportation and roading. We wanted to provide accurate and timely information to enable citizens to make informed decisions relating to their transport choices, which will increase the use of public transportation. Our 1100 employees, scattered across multiple locations, were spending too much time travelling to meetings, and were using disparate technologies for communication and storing documents. We also inherited a number of different computer systems from the eight councils and legacy processes that were inefficient.

## The Solution

We have created a number of new applications to give citizens online access to personalised transportation services. MyAT, for example, lets citizens report potholes and other road damage. It also provides personalised information regarding their integrated ticketing card. Other types of information will be added over the coming months.

We also post repairs and other scheduled work to both MyAT and our new device-agnostic web sites so citizens can monitor work in progress. City bus commuters are able to create personal transportation selections that remember their favourite routes. MyAT currently alerts commuters of train disruptions. It will soon alert commuters if bus routes are affected due to road closures. Our employees are now equipped with modern productivity tools that can be accessed via multiple devices, such as desktops, laptops, ultrabooks, tablet computers and smartphones. Instead of driving to meetings, they now save time by communicating more fluidly using instant messaging, phone services and video conferencing (which is available at every desktop).

Collaborating with other agencies and external stakeholders has become easier. People involved in the various projects can share documents using a cloud-based service and authorised external users can securely access our systems through 250 virtual desktops. To support all these changes, we invested in a consolidated core data centre infrastructure and gave the technical staff a modern, comprehensive suite of data centre management tools. We have also outsourced a number of technical areas to keep all our IT services running reliably around the clock.

## The Outcome

The newly created applications help us to be more citizen-centric and make Auckland a more attractive place to live. They reduce citizen frustration, provide information to ease transport decisions and increase ridership. Along with the new IT infrastructure, we also analysed 4 terabytes (8 million rows) of operating data using business intelligence technology. For example, we analysed bus ridership data to discover the most popular routes, as well as customer feedback to identify the problems passengers are facing. Such analysis helps us to plan the expansion of routes and improve commuter experience. We hope that by improving service and experience on public transportation, more people will choose to travel with us. The new productivity tools proved to be very popular among our employees. In a three-month period, we logged more than 1800 video-conferencing hours, which saved on significant travel time that would have been required to conduct these meetings in person, and enabled faster decision making. The online centralised file repository enables all of our documents to be indexed, searched and retrieved as required. It enables employees to perform intelligent information searches that deliver the needed information faster.

An added benefit of the modern workplace technology and flexible work options is the ability to attract and retain staff in a competitive labour market. We feel that the exciting work has just begun for us, and we are planning to further transform our business through the use of technology, including new applications, further insights from analytics, better citizen engagement and leveraging cloud technology. Our employees are coming up with innovative mobile apps, such as displaying available parking spaces and associated costs, for booking parking spaces, for letting parents know if their children have boarded the bus and if the bus is running late, and for letting riders point their smartphones at bus stops to find out which buses stop there and where they go. These apps will be implemented in due course.

We also plan to expand our business intelligence capabilities to analyse data from thousands of surveillance cameras in parking lots, at bus stops, traffic lights and in other locations to understand where traffic congestion occurs, manage traffic in real time and collect reliable and accurate planning data. Engaging citizens through social media is another area we are focusing on. We want to improve customer interactions, enhance our organisation's image with the community and detect possible transport impacts early.

# Minato Mirai 21

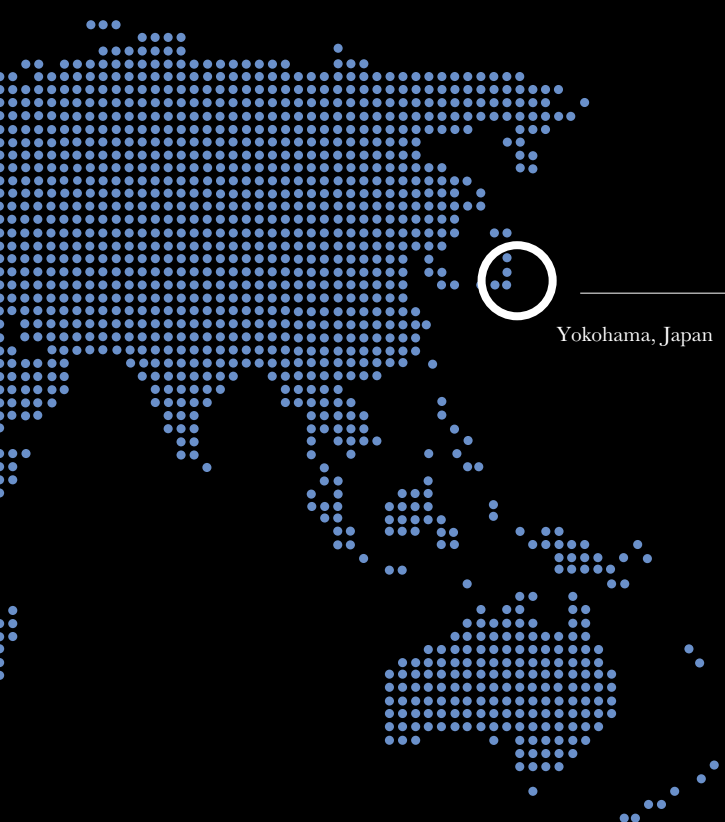
## REVITALISING THE CITY

**Y**okohama's liveability, competitiveness and identity declined historically as it became an extension of Tokyo and waterfront industries divided, polluted and congested the city-centre. Mayor **Fumiko Hayashi** explains how "Minato Mirai 21" revitalised the area, resulting in Yokohama receiving a LEE KUAN YEW WORLD CITY PRIZE Special Mention in 2014.



01 Yokohama's industrial waterfront, 1962.





Yokohama, Japan

## The Challenge

During the 1950s and '60s, when Tokyo experienced a strong inflow of population, neighbouring Yokohama became a target of its metropolitan expansion. The city became an extension of Tokyo, functioning as its commuter town and industrial zone. Consequently, pollution worsened, greenery and farmlands diminished in size and importance, and the city fragmented, losing its identity. This trend continued throughout the 1970s. Even as the city grew, its urban centre remained weak and uncompetitive, while its suburban areas became less liveable.

Yokohama's Central Business District (CBD) had its own issues. The Coastal Zone of the CBD was occupied by a shipyard and industries, which prohibited public access to the waterfront. The traditional business districts of Kannai and Kangai and the active transportation hub of Yokohama Station were divided into two segregated areas. Worsening the situation was the large volume of traffic going through the CBD to the port. A multi-objective solution was required to enhance the business function of the CBD, reunite the two districts to create new business opportunities, revitalise the city, and mitigate traffic congestion and pollution.

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## The Solution

The project “Minato Mirai 21 (MM21)”, which means “Future Port for the 21st Century”, commenced in 1983 to redevelop 186 hectares (1.86 square kilometres) of waterfront and reclaim 74 hectares (0.74 square kilometres) of land. In redeveloping this area, the aim was to establish a business, commercial and cultural hub for the city. A rejuvenation of the waterfront would also restore Yokohama’s cultural identity. A shipyard, which used to divide Yokohama’s two main business districts, was relocated to the Kanazawa reclamation area along the coast of Yokohama City. This controversial yet historic decision to relocate the shipyard significantly

helped in realising the development plan for this coastal city centre.

Designed as an integrated package of projects, MM21 was implemented with full coordination between the city’s stakeholders. Infrastructure and public facilities were constructed mainly by the public sector. Specific project activities included the following:

### ***Transportation and Infrastructure Development***

The expressway which had been originally planned by the central government as an elevated structure was built underground to avoid creating an urban blight in the landscape. In addition, a new urban railway line was constructed to connect MM21 with other areas in the city and with the Tokyo Metropolitan Area.

### ***Heritage, Greenery and Urban Design***

The Yokohama Red Brick Warehouse, which, in 2010, was the first in Japan to receive the UNESCO Asia-Pacific Heritage Award of Distinction; the Dockyard Garden, which is the oldest commercial dockyard in the country; and the training ship Nippon Maru, which was launched in 1930, are three of the historic monuments at MM21, serving as witnesses to the city’s glorious past.

01 People enjoying Red Brick Warehouse park, with MM21 skyline behind.







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In addition, a pedestrian network, comprising streets, malls, parks and waterways, was developed to create a safe and pleasant space for pedestrians. Efforts at urban design were made as well, with the creation of MM21's skyline, unification of colours for structures, and restrictions on advertisements.

***Living Environment***

Environmentally friendly housing with a good living environment was developed, along with the introduction of new technologies such as community air-conditioning, a multipurpose underground utility conduit, Comprehensive Assessment System for Built Environment Efficiency (CASBEE), etc.

***Multifunctional Urban Activities***

This new urban centre attracted new investments, including by Japan's leading firms, allowing workplaces and residences to be located close together. International MICE (meetings, incentives, conferences, exhibitions) events such as Asia-Pacific Economic Cooperation (APEC), the Tokyo International Conference on African Development (TICAD) and the Intergovernmental Panel on Climate Change (IPCC) were held at Pacifico Yokohama, a multifunctional convention complex, further attracting business activities from overseas.

02



01 The MM21 project included the restoration of the Yokohama Red Brick Warehouse and Nippon Maru.

03 This landscaped pedestrian network was a result of the MM21 project.

04 The new Minato Mirai 21 (MM21) area, after redevelopment.





03

### ***Sharing the Financial Burden***

The total amount spent on MM21 up to 2012 was JPY517.3 billion (US\$5.05 billion). The city shared the financial cost with various sectors, including the national government and the public agency which undertook land readjustment programmes. So far, the city has borne only 16% of the total cost of this urban redevelopment project.

### ***Urban Management***

The private company MM21 Co. Ltd. (currently Yokohama Minato Mirai 21 Corporation) was established and undertook planning, promoting, marketing and coordination for locations of investments and their activities. The “Basic Agreement on Machizukuri (community planning)” under MM21 Co. Ltd. was formulated, and this agreement, which indicates the rules for a coordinated and harmonised development, was voluntarily signed in 1988 by both landowners of MM21 and Yokohama Minato Mirai 21 Co. Ltd. The agreement is enforced by the MM21 Town Building Council.



04

## **The Outcome**

MM21 revitalised Yokohama’s CBD, becoming an engine of growth and enhancing the city’s image. As of 2013, 93,000 were working at MM21, and annual tourists (business and recreational) to the area totalled 72 million. About 1,720 firms have their offices at MM21. The city earned about JPY14.6 billion (US\$140 million) worth of taxes from the area in 2012, and the estimated cumulative economic effect is as large as JPY2.7 trillion (US\$30 billion)



01

for construction activities and JPY1.8 trillion (US\$20 billion) for business activities annually. Ultimately, the project aims to create a district where 190,000 people work and 10,000 people live.

Today, MM21 has become a readily recognisable CBD and cultural centre, attracting businesses, museums, MICE events and tourists from all over the world. The area is also disaster-resilient, utilising various disaster-proof technologies such as quake-resilient quays, underground utility tunnels, etc. The success of MM21 can be attributed to various factors. The city government remained committed to its long-term vision and policy, which stakeholders also understood. In response to changes in socio-economic contexts, urban planning and management was

strategic and integrated. There was effective coordination between the city and central governments, among developers, and between MM21 and all stakeholders. The partnership between the private sector and city government resulted in innovative funding mechanisms. Finally, the value added by MM21 attracted investments and associated activities.

Now the city has set a new long-term goal to make MM21 a showcase for the future city. The city has launched various new urban development measures under the scope of the Minato Mirai 2050 Project, with the aim to realise the smartest future environmental city in the world, the centrepiece of global attention.



**Fumiko Hayashi**

has been Mayor of Yokohama since 2009. Before assuming office as Mayor, she served as President of BMW Tokyo Corp., Chairperson and CEO of The Daiei, Inc., Operating Officer of Nissan Motor Co. Ltd. In 2005, she was selected as one of *Forbes Magazine's* “The World’s 100 Most Powerful Women” and received the Harvard Business School Businesswoman Award in 2006.





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Solaris

Gardens by The Bay - Central Master Plan

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Redevelopment of Changi Prison Complex



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Website : cpgcorp.com.sg/CPGC

CPG Consultants is one of the leading development professionals in the region providing the full spectrum of building and infrastructure development services. With a heritage dating back to 1833 as the former Singapore Public Works Department, we have contributed significantly to the physical development of Singapore.

Leveraging on our strong track record and established Singapore brand name, CPG today has over 15 overseas offices and has expanded its portfolio to over 20 regional economies outside Singapore, with China, India, ASEAN and the Middle East as our key markets.

Our projects have delivered sustained success due to our unique approach of balancing the needs of any development, which are issues of enhanced mobility, strong economic base, sustainable environment and social welfare. As these issues are not the same in all projects our services at CPG Consultants have been organised into four major orientations as highlighted here.

CPG Consultants' approach of prioritising developments into major orientations is derived by the collective experience and knowledge that resides within our firm of having successfully positioned many of our projects in different markets. This has helped in creating a positive impact on the lives of all the people whether they are residents, businesses, visitors or investors.



## Transit

### Oriented Development

In cities around the world, integration of transportation infrastructure and land use development at major public transport nodes has become the fundamental planning principle for future sustainability. TOD is a mixed-use residential and commercial area designed to maximise access to public transport, and incorporates features to encourage transit ridership. Such an approach adopted at CPG Consultants offers multiple benefits like optimised land potential, increased land value, reduced traffic congestion, air pollution and greenhouse gas emissions, walkable communities that accommodate healthy and active lifestyles, improved access to jobs and economic opportunity for low-income family and expanded mobility choices.

## Ecologic

### Oriented Development

Ecologic Oriented Development approach to design stems from the fundamental belief to respect site characteristics and natural systems with the intention to promote self-sustaining technologies including water management, climate mitigation, energy production, and even food production. CPG Consultants not only delivers sustainable design but has been pushing the frontier of regenerative design, where design stems from the desire to engage the natural world. The guiding principles for EOD include complete waste and water cycles, integrated infrastructure systems, design for efficient energy use and generation, restore streams & rivers, re-establish natural habitats and wildlife, and maximise on-site food production.

## Healthcare

### Oriented Development

Medical City as home to top hospitals, universities, research institutions and life science companies has begun to capture the attention of city planners, policy makers and developers to create jobs and generate economic development. On the other hand, today's global economy, aging population, rising costs of new construction, increased compliance mandates and reduced reimbursement has forced healthcare organisations to pursue alternative methods of financing. CPG Consultants has transformed its practice to engage urban development with healthcare focus. HODs ranges from integrated care facilities from primary to tertiary care, academic medical campuses, bio medical business parks, to medical cities which includes living, commercial, workplace and recreation.

## Knowledge

### Oriented Development

In its former role, CPG Consultants played a key role in creating the physical infrastructure to support the growth of Singapore into a competitive knowledge economy. We have designed education facilities from K to 12, Universities and Institutes of Higher Learning. More recently, CPG Consultants has evolved from planning university campuses to business districts for creative industries. At CPG we believe cities that succeed in driving innovation and attracting a "creative class" of knowledge workers, facilitates creative industries to flourish, adding a different dimension to the urban quality of the city. The key concept of the knowledge economy is that knowledge and innovation can be transformed into a business product or a productive asset.





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# ORIENTED DEVELOPMENT

## CONSULTANCY APPROACH



**Changi Terminal 1, 2, and 3, Singapore**



**Gali Batu Depot, Singapore**



**Downtown Line Stage 2, Singapore**



**Bosphorus Tube Crossing, Tunnels, and Stations, Istanbul, Turkey**



**Xianmen Zhongshan Park Station, Xianmen, China**



**Van Giang Master Plan, Hanoi, Vietnam**



**Sungei Buloh Wetland Reserve and Wetland Park, Singapore**



**ABC Waters Programme, Singapore**

**Solaris, Singapore**



**Gardens by The Bay, Singapore**



**Khoo Teck Puat Hospital, Singapore**



**Duke-NUS General Hospital, Singapore**



**Outram Medical Campus, Singapore**



**Indus Karachi Hospital, Karachi, Pakistan**



**Kunshan Hospital, China**



**GEMS World Academy, Dubai**



**NUS School of Medicine, Singapore**



**Mediapolis @ one-north, Singapore**



**NUS High School of Mathematical & Science, Singapore**



**South Spine Learning Hub NTU, Singapore**





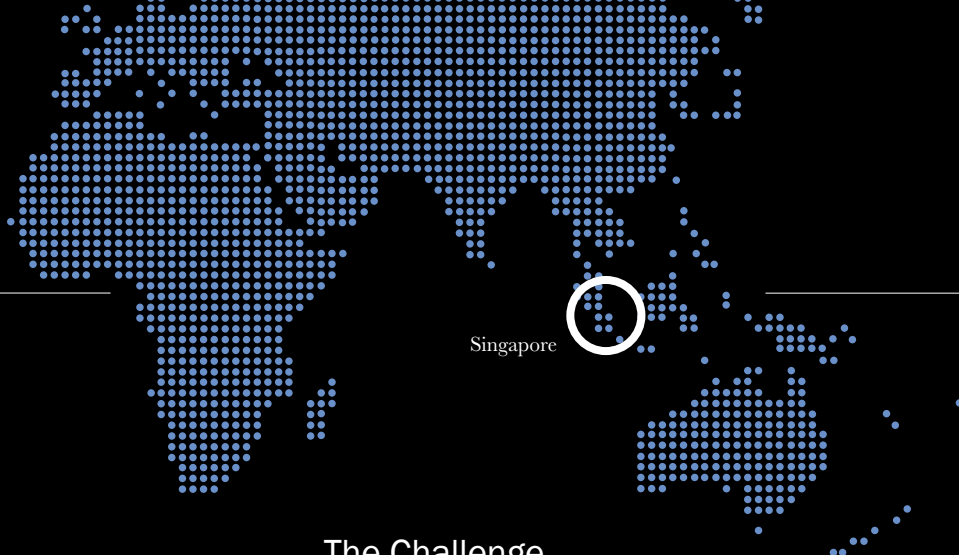
# Waterways Watch Society

*KEEPING SINGAPORE'S  
WATERS CLEAN*

**F**or years, littering has contaminated Singapore's waterways – the chief source of its drinking water. The Waterways Watch Society, an independent organisation of volunteers, is determined to raise awareness of the problem and to build a culture of environmentally responsible behaviour. **Eugene Heng**, the Society's Chairman, explains how they do this.







## The Challenge

Over the years, there has been a rise in the pollution of Singapore's waterways. All of its waterways are interlinked through extensive networks of shallow drains that lead to deeper canals, large rivers and eventually, the present 17 reservoirs island-wide. Precious water collected is then treated before being supplied as ready-to-drink water to taps in homes and buildings.

Littering is the main cause of such pollution. The costliest evidence of this is the clean-up of the Singapore River in 1987, which spanned 10 years and cost about S\$300 million (US\$239.4 million). Now the rivers and canals are relatively clean, but littering and illegal disposal of waste are still taking place. In view of the economic and environmental costs of pollution, effective management of the environment ranks as a key concern for the

Singapore government. Building the framework and infrastructure for a clean environment falls to the government, but sustaining it and ensuring the responsible use of such facilities falls on the people.

Formed in 1998 to raise public awareness on the importance of keeping Singapore's waterways clean, the Waterways Watch Society (WWS) is an independent volunteer group that also rallies the public to help clean up the waterways. Instead of aggressively recruiting members, we focus on spreading the message of environmental awareness and cleanliness to attract passionate, like-minded individuals to join us. So far in the course of our work, we have interacted with about 150 schools out of over 400 locally, and some 100 companies out of thousands in Singapore. What's worrying is that 90% of our participants do not have prior knowledge of the litter problem affecting our drinking water in the reservoirs. This means that an even larger population group may be unaware of this problem.

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01 Litter in one of the rivers monitored by the Waterways Watch Society.



01

## The Solution

Over the years, the WWS has diversified its activities to include boat, bicycle and kayak patrols; beach clean-ups; environmental camps; water-monitoring programmes and customised programmes like Learning Trails for schools and corporates. In 2013 alone, our programmes expanded to include the Marina Bike Learning Trail, the Eco-Kayak Learning Trail and the Waterways Watch Explorer programme. This diversification of activities enables us to reach out to people with different backgrounds, interests and needs. It also offers our volunteers different avenues to contribute to our environment.



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01 Kayak patrol volunteers removing litter.

02 Youths learning how to test water quality.

03 Participants in the Waterways Watch Explorer programme.



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We strongly believe in the importance of partnerships with government agencies, schools, corporates and other organisations to effectively raise awareness about, and encourage participation in, environmental and water conservation. We share observations of water issues with PUB, the national water agency, and land pollution issues with the National Environment Agency (NEA) and the National Parks Board (NParks). Since 2013, we have been sending select members who have shown dedication and commitment to their WWS volunteer duties for training as community volunteers with the NEA. Upon successful completion of this programme, such members are empowered to warn and issue fines to members of the public who are caught littering.

We rely on the collective expertise of small working committees within our society to develop, test and implement our programmes. As the majority of our volunteers have day jobs, this means programmes can take a longer time to develop. New programmes also take time to gain traction with our existing and potential community partners. As most of our programmes involve the outdoors, our programmes can be affected by inclement weather, the most impactful being the recent bouts of severe haze.

Sourcing for funding is also a continuous challenge for us. The good news is that we have recently gained approval as a charity with an Institution of Public Character status, which enables us to accept tax-deductible donations from the public.

We also face persistent challenges in our daily work. Often, we see events held around our reservoirs where participants leave litter, expecting public cleaners to pick up after them. We are continuously increasing our engagement via social media to spread awareness about the problems of littering and pollution, and how they adversely affect our waterways. We strongly advocate a national policy to support good social behaviour and kindness to the environment.







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## The Outcome

Our approach to volunteer recruitment has garnered us steadfast volunteers who are passionate about environmental issues and actively participate in our programmes. From just 30-odd members when we started out, the WWS today has about 350 member volunteers. The growth in our membership and programmes has spurred the opening of our first branch at My Waterway@Punggol in March 2014. At Punggol, we hope to spread the message of keeping our waterways clean to more residents in the heartlands. We will also conduct briefings and organise patrols of the Punggol waterways.

Our work has been endorsed by PUB, the NEA and NParks over the past decade. Our environmental programmes have garnered us recognition from the public, the inaugural President's Award for the Environment (2006) and the inaugural PUB Watermark Honorary Award (2007).

02



01 The Society depends on volunteers to develop, test and implement its programmes.

02 Gardening is one of the Society's activities that promotes hands-on involvement by participants.



**01** To promote a culture of cleanliness, the Society has engaged some 150 schools in diverse ways, like the River Monster Programme.



**01**

For each programme, we strive to leave a lasting impression with the participants by providing opportunities for hands-on involvement and facilitating a holistic understanding of conservation issues. Some participants subsequently joined us as WWS members. As climate change becomes more pronounced and the effects more directly felt, our programmes are ever more relevant. However, we still face problems such as the lack of funding. While there is always strong financial support for helping the poor, sick, underprivileged, unfortunate or elderly, environment care is often perceived to be the government's responsibility or something that will take care of itself.

For us, the continuing challenge is to get more people to become aware of the extent of the littering issue and more importantly, to form a culture of cleanliness. However, our awareness programmes are not enough. There need to be more initiatives and even mandatory requirements to inculcate environmentally responsible behaviour. Time is not on our side.

**Eugene Heng** is the founder and current Chairman of WWS, which has received the President's Award for the Environment and PUB's Watermark Honorary Award. Mr Heng is a member of the Public Hygiene Council and Singapore Water Network. He has served on advisory committees such as the Ministry of the Environment and Water Resources's Focus Group on Water.



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# A Better City

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## THROUGH MOBILITY



Medellín, Colombia

**F**rom its dark past of drugs and violence, Medellín today is Colombia's best example of remarkable recovery. The city's transformation in recent years has attracted global attention. The Urban Land Institute, City Group and *Wall Street Journal* declared Medellín "Innovative City of the Year" in 2013, and it received a LEE KUAN YEW WORLD CITY PRIZE Special Mention in 2014.



01 Medellín's rugged geography left slums physically isolated and prone to many serious problems.

01





## The Challenge

The second half of the 20th century was paramount in shaping Medellín today. During this period, the city became the industrial capital of Colombia. Unfortunately, as a result of an economic and institutional crisis, Medellín during this time also experienced its darkest moments, ranking among the most violent cities of the world (381 homicides per 100,000 people in 1991) as a result of drug trafficking.

The problems of drug trafficking and violence, combined with the needs of the community and the traditional challenges pertaining to urban sustainability, posed huge hurdles to the government's efforts to provide better opportunities to the population in terms of living conditions, public utilities, health care, education and safety.

The poor then were living in slums ruled by drug lords and criminals, and isolated from the city centre. Cut off from areas of economic vitality, they faced problems such as low income, social exclusion and insecurity due to lack of state presence. Medellín understood it needed to improve social inclusion and social justice while ensuring modernisation and competitiveness. The aim was to boost development and avoid social gaps.



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## The Solution

During the mid-'90s, a project defined the transformation and resilience that the city has displayed since then: the Metro. Besides providing mass public transportation services, this company has also been making urban interventions since its inception. The idea was to enable easier and faster commuting, while building stations that would make their surroundings friendlier and safer. Hence, the Metro sparked the idea of raising the quality of life with urbanism. No wonder its corporate slogan states: "Metro: Quality of Life".

Mobility, for any government, always represents a challenge. However, the case of Medellín is special because mobility has provided the city with remarkable benefits that surpass mere transportation, particularly since 2004. Besides helping to modernise the city, the Metro has been pivotal in consolidating social inclusion as it allowed the once economically and socially disadvantaged a newfound mobility and freedom

to access jobs, amenities and opportunities across the city, beyond their slum neighbourhoods.

This is why Medellín today has a multi-modal ground mass transportation system which is constantly developing and improving. The different modes of transport that contribute to the city's environmental sustainability are: the Metro (electric train with two rail lines); Metrocable (electric gondolas with three lines in operation and two under construction); Metroplus (Bus Rapid Transit systems and integrated bases operated by gas with two active lines, 25 routes and the implementation of seven lines underway); and Tramway (electric trams under construction).

02



01 Beyond mass transport, the Metro aimed to improve urban spaces around stations.

02 The Metro helped modernise the city and promote social inclusion.



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01



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01 Footpaths, stairs and bridges were built in poor neighbourhoods like Juan Bobo.

03 Three Metrocable (electric gondolas) lines are in operation, with another two under construction.

Subsequently, Medellín has focused on making deep changes to its poorest neighborhoods, for example, by providing additional and improved public spaces where citizens can gather. These well-designed areas offer security and restore dignity to the people. They are also easily accessible – for those who have to walk long distances, given the city’s rugged geography.

Consequently, the hard-to-reach areas, mainly remote settlements, today have proper schemes for mobility by foot. The use of trails, bridges and staircases in optimum condition, meeting the most urgent needs of the populations and the geographic conditions of each area, and based on the aforementioned, adds to the remarkable model of social innovation of Medellín.

A good example of this is the world’s first mechanical stairs for public use. This solution helps about 10,000 people climb a steep mountain that is equivalent to a 15-storey building every day. In addition, the first public bicycle system of Colombia, known as EnCicla, will have 1,500 bicycles in service by 2015. Both of these systems complement our Mass Transportation Integrated System, contributing to modernising public space and environmental sustainability.









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## The Outcome

Medellín has managed to commission a clean, adaptable and modern integrated mass transportation model that solves its current needs and is suited to the city's geographic conditions.

Mobility has been paramount to the city's transformation given that it has improved social issues that seem unrelated, such as security. A study conducted by Universidad Autónoma Latinoamericana research group GINVECO in 2011 revealed that "97% of the population of Commune 1 – where the first Metrocable operates – perceive that their quality of life has improved with the system, while 86% state that the system increased the presence of the city's administration and hence, peace".

That same perception prevails in the rest of the city, given that the reputation indexes of the Metro have surpassed 92% since the year 2009. Likewise, in the past five years, users have gained savings in time of 30 hours per week and more than 90% of the users are from strata 1, 2 and 3 – the poorer segments of the population.

Lastly, it is worth noting the most recent mobility projects of Medellín. Metroplus mobilised 14.2 million passengers during its first year of operation in 2012 and the Tramway, currently being built, estimates an investment close to 610,000 million Colombian pesos (US\$315,263). Also, the pilot project of the EnCicla system represented an investment of 1.1 billion pesos (US\$569,497) to build a programme that offers 145 bicycles free of charge for the citizens registered to the system.

**Juan David Valderrama López** is the Executive Director of the Agency of Cooperation and Investment of Medellín and the Metropolitan Area. He was advisor to the president of Grupo EPM in 2008 and 2010, where he coordinated the implementation of special projects such as Tarjeta Grupo and Aldeas, which have advanced community development in Medellín and other municipalities of Antioquia, Colombia. He also worked as the Private Secretary to the Mayor's Office of Medellín in 2009 and 2010.

01 The mechanical stairs, or escalators, provide access up steep mountainsides.





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Image Above:  
Xiangyang Master Plan

Foreground Images (in colour)

Marina Bay Cruise Centre Singapore  
(In association with Bermello Ajamil & Partners Irb)  
(Photo Credit: Aerial Pixels Pte Ltd)

Devan Nair Institute for Employment and Employability

Watertown and Waterway Point

(Image courtesy of Far East Organization,

Fraser's Centrepoint Ltd and Sekisui House Ltd)

Background Images from left to right:

Republic Plaza (In association with Kisho Kurokawa Architect & Associates)

HDB Hub (Image courtesy of Shimizu Corporation)

The Pinnacle@Duxton (In association with Arc Studio Architecture & Urbanism)

ION Orchard & The Orchard Residences

Capital Tower



WHAT LIES BEHIND

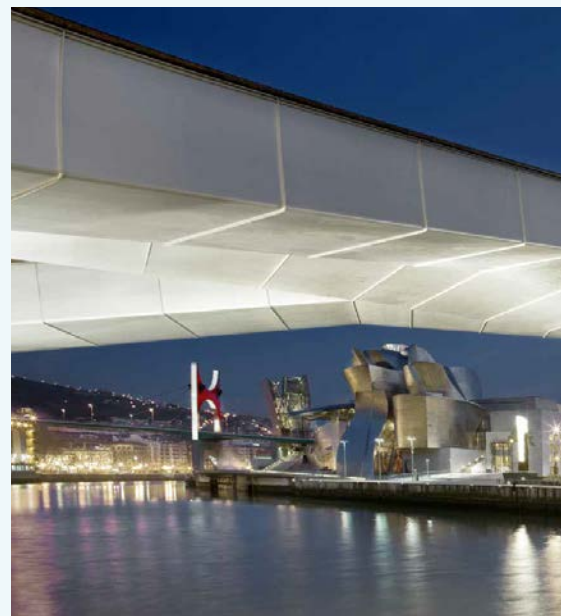
# SUCCESSFUL, LIVEABLE CITIES?

**H**ow have some cities overcome challenges to become places that people enjoy inhabiting? Centre for Liveable Cities (CLC) researchers **Pablo Vaggione** and **Elyssa Ludher** analysed many such cities using the CLC Liveability Framework for their chapter in the book *Liveable and Sustainable Cities: A Framework*, co-published by CLC and Singapore's Civil Service College in June 2014. Here are some insights.

The United Nations estimates that by 2030, five billion people will live in cities, up from 3.6 billion in 2011. The challenge of accommodating the thousands that move to cities daily is acute to avoid the cities becoming hotbeds for social inequality and fragmentation, dis-economies of scale and environmental degradation. Urban challenges are often complex and seem insurmountable. Yet some cities are, incrementally but surely, overcoming them and turning their cities around. How did they do it?

Based on its research into Singapore's extraordinary development experience, the CLC developed the CLC Liveability Framework. This suggests the conceptual foundation that permeated Singapore's leadership,

<sup>01</sup> Visionary leaders turned Bilbao from a declining industrial city into a gleaming cultural hub.





institutions and governance structures, which enabled the effective management of Singapore’s complex challenges and rapid growth. We used this Framework to analyse successful cities around the world, and found three underlying parallels. One, these cities have a vision of what they would like to achieve; second, there is a comprehensive plan on how to achieve them; and last, there is institutional support to carry out these plans.



*Urban challenges are often complex and seem insurmountable. Yet some cities are, incrementally but surely, overcoming them...*

**Aim High and Wide**

In a 2011 interview with the CLC, then-CEO of JTC Corporation Manohar Khiatani said: “Dare to dream... One day we want to make aircraft engines, man-on-the-moon statement[s], but we don’t know when we will get there. Even if we don’t get there, maybe we’ll get a consolation prize – it’s still very good... Sometimes they say, ‘This fellow is damn naive!’ But it is okay because what is naive today, 20 years down the road, it might still happen because technology changes.” This characterises many of Singapore’s policies.

Bilbao’s leaders, too, had the audacity to dream. In the 1980s, delocalisation of the heavy steel and shipbuilding industries led to the loss of half of industrial jobs; unemployment reached a record 25% by 1985. Long years of industrial action, sometimes violent, ensued, followed by population decline and intense physical decay. Against this backdrop, Bilbao launched its urban revolution that led to one of the most miraculous transformation stories in recent history. A holistic and integrated approach was devised to deliver 25 interventions over 25 years covering high environmental, cultural, social and economic goals, including the regeneration of the contaminated river, regeneration of derelict inner city space, improving neighbourhood spaces, and introducing new architecture highlighting Bilbao as a centre for arts and culture.

01





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While Suzhou has experienced 2,500 years of successive rise and devastation culminating with rapid industrialisation, it has conserved its historic city and gardens, and become a first mover in inclusive social policies and environmental restoration. Over the last two decades, residents have enjoyed a nearly twenty-fold increase in annual per capita disposable household income to 41,143 yuan (US\$6,600 in 2013), and the city has achieved 42.3% city green coverage. It has introduced free compulsory education and increased social welfare benefits, thus improving the quality of life for residents and non-native residents alike. Suzhou's transformation is remarkable for the wide-ranging and ambitious standards it has worked to achieve.

Copenhagen is audaciously planning its future by committing to be the world's first Carbon Neutral Capital by 2025. By adopting the Copenhagen Climate Plan in 2009, the city has committed to a comprehensive set of 50 initiatives that would reduce motorised transport, replace fossil fuel energy/heat generation with alternatives and adopt green building standards.



*By adopting the Copenhagen Climate Plan in 2009, the city has committed to a comprehensive set of 50 initiatives...*

02





## Plan Comprehensively

Without planning, visions remain on paper, and agencies lack clarity to move forward, resources are not allocated adequately, and development is imbalanced. Planning must be strategic, tangible, realistic and dynamic. To create liveable cities, it must integrate all aspects and sectors of society. A city's challenges are often complex; a coordinating body is thus important to keep view of the various cross-dimensional initiatives, arbitrate across agencies, and monitor goals.

In the early 1800s, needing to address poor street layout and air circulation, New York's Common Council concurred that a long-term framework was indispensable to manage growth. It produced the 1811 Commissioner's Plan which has defined Manhattan until today. Two centuries later in 2007, the city released PlaNYC to again address the complex needs and raise its urban vitality. PlaNYC considers a 30-year time frame, and is to be updated every four years, coordinated by the Office of Long-Term Planning and Sustainability.



03

PlaNYC's goal of achieving a greener and greater New York City, structured in 10 categories from waterways and transportation to energy and climate change, contains metrics to assess progress. Over 97% of the 127 initiatives were launched within one year of the commencement of the plan and almost two-thirds of the milestones in 2009 were achieved or mostly achieved, according to the PlaNYC Progress Report 2012. For example, planning regulations have been adopted for over 20 transit-oriented schemes with the aim of making 87% of new housing units 400 metres from a public transport stop by 2030. Another target is that 85% of New Yorkers would live within 400 metres from a park. To meet this target, more than 200 acres (0.8 square kilometre) of parkland were created, ensuring that over 74% of residents now live within a 10-minute walk of a park.

- 01 Suzhou has set, and achieved, high living and environmental standards.
- 02 Copenhagen commits to be the world's first Carbon Neutral Capital.
- 03 Thanks to PlaNYC, 74% of New Yorkers live within a 10-minute walk of a park.

Plans have to be adaptive and contextualised to local needs. While it is less risky to adopt tried and tested policies, innovation not only keeps cities competitive and vibrant, but also dynamically addresses challenges.

Melbourne managed to turn its “empty, useless city centre” (as described in *The Age* in 1978) to the lively, 24/7 city that it is today because of its bold decision to reinvent the city to be built around strong communities and liveable public spaces. Through its Places for People programme devised by architect Jan Gehl, the city upgraded its promenades, laneways and meeting points, and installed public art. A 10-year goal was set to increase the city’s liveability and to establish benchmarks to measure its progress. Within a decade, the city reported that there were 275% more cafes (1993-2004) and 830% more residents in the inner city (1992-2002). Thousands flocked to Bourke Street and Swanston Street at all hours, raising safety as well as the vitality of the city. Melbourne is now consistently named as one of the most liveable cities in the world.



02

The city of Cape Town, facing high crime and violence in its expansive shantytowns, introduced Violence Prevention through Urban Upgrading, a public-private partnership project in Khayelitsha in 2006. Rather than use a top-down approach, the partnership chose to create safe and sustainable neighbourhoods by reducing social, cultural, economic and institutional exclusions. It adopted a multi-solidarity methodology, based on the local concept of Ubuntu. Comprehensive community consultations raised novel proposals that adapted local resources and innovative design solutions. The benefits were multifold; not only in the physical upgrading of the environment, but also community empowerment, funding retention and local socio-economic improvement. The city’s courage to undertake new approaches not only led to better understanding of the complex issue of safety, but also surfaced new design principles which are being replicated throughout Cape Town and other South African metropolitan regions.



*A 10-year goal was set to increase (Melbourne’s) liveability and to establish benchmarks to measure its progress.*



01

- 01 More downtown residents, cafes and public art helped make Melbourne more liveable.
- 02 Community consultation has produced multifold benefits in Cape Town.
- 03 Hong Kong prosecuted 247 public officials in its anti-corruption crackdown.





### Let the Roots of Support Grow

The best intentions in planning amount to nothing if not supported by a sound urban governance system. Projects may remain uninitiated, be derailed, completed shoddily, or bring long-term harm to the city. Urban governance refers to the manner in which public leadership interacts with citizens and other stakeholders to make decisions on and have oversight of how a city plans, develops and manages its physical and environmental resources to achieve outcomes.

A visionary leader is often a key catalyst for sound urban governance. Surabaya’s Mayor Tri Rismaharini, is one such catalyst. Well known for her hands-on approach – she is often found picking up litter from the streets – Mayor Risma has helped to transform Surabaya, a port city of three million in East Java and Indonesia’s second largest city, from a dirty city into a green and clean city, where quality of life is being visibly raised. Not only has the green cover increased to 20% (target is 30%), her e-procurement system has saved the city 13%-24% of its budget; and the newly introduced waste management measures have formalised the income for sorters and delivered socio-economic benefits to the city’s poorest.

Sound agencies are another vital ingredient for a sound urban governance system. The trustworthiness of its administration is a principal asset for a city, providing a climate for long-term value creation, investment, jobs and partnerships. In 1974, against a backdrop of rampant corruption, the Hong Kong government initiated the Independent Commission Against Corruption (ICAC). Within three years, the ICAC had eliminated all government syndicates and prosecuted 247 government officers. Hong Kong’s high level of transparency continues to contribute to not only citizens’ trust in its institutions, but also economic vitality as corporations choose to base offices there. New York City, too, has a long-term vision for data transparency, based on the conviction that public knowledge brings the accountability needed to empower the city’s delivery-focused planning.

Creating a liveable city is a huge and complex undertaking, and its public institutions need the support of the city’s people and private sectors. This also ensures all have a stake in the city’s growth, together contributing to the long-term good of the city.

Bogotá’s Como Vamos (BCV) (“Bogotá, how are we doing”) is a prime example of how governance can be supported by the grassroots.

○○  
*Well known for her hands-on approach – she is often found picking up litter from the streets – Mayor Risma has helped to transform Surabaya...*

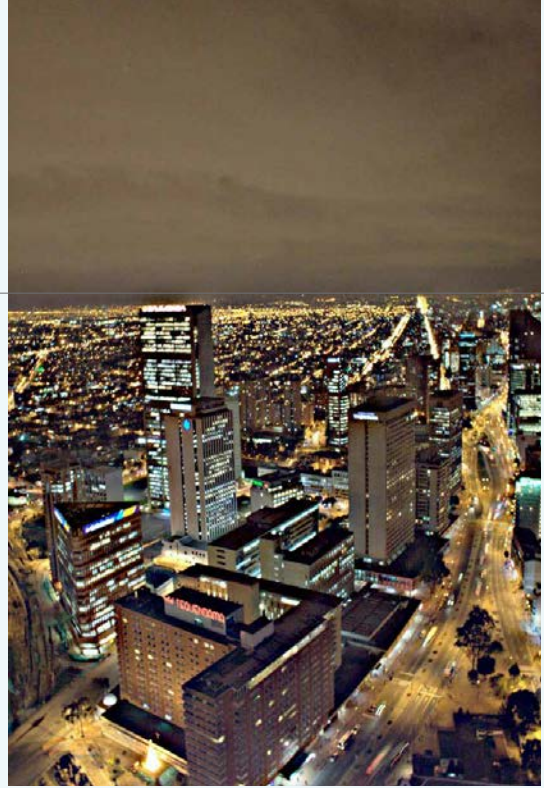


Formed in 1997 to track local election promises, it calls for citizens to exercise social oversight of public administration and budgeting. It analyses public data on areas such as health care, housing and education against citizen perception surveys. Findings, along with proposed solutions, are fed back to policymakers and experts, as well as disseminated to the public via mass media. In addition, BCV works with the Bogotá district governments to monitor the development, implementation and execution of the Bogotá Development Plan through forums and roundtables.

### **A Framework for Development**

So what lies behind successful, liveable cities? History suggests that cities that have successfully overcome periods of decline have had a key tool in common – a framework for development. This allowed them to plan with purpose and develop the systems needed to implement such plans and operate accordingly.

The CLC offers its Liveability Framework as a lens through which city leaders can view their cities and analyse the actions or approaches open to them to achieve high liveability and sustainability. How these principles can be applied must, naturally, respond to each city's own governance structures, priorities and resources. However, cities that are able to define their framework are best placed to undertake complex and far-reaching initiatives to be one step closer to becoming successful, liveable cities.



01



**Pablo Vaggione** is dedicated to resolving the challenges of rapid urbanisation. He was the Lead Author of UN-HABITAT's guide *Urban Planning for City Leaders*. He has worked on projects for the World Bank, Inter-American Development Bank, CAF (Development Bank of Latin America), Asian Development Bank, Siemens AG and the Economist Intelligence Unit. An architect by training, he studied urban planning at Harvard and sustainable development at the United Nations University.



**Elyssa Ludher**, an urban and regional planner, has 10 years of experience in public and private sector in Australia, China and Cambodia, including Brisbane City Council, CORDE (Cambodian Organisation for Research, Development and Education) and SKM consulting. She now conducts research at the Centre for Liveable Cities to continue to understand and share solutions on how cities manage increasingly complex social challenges in our globalised world.

01 Bogotá citizens organise themselves to monitor government and hold it accountable.



# THE URBAN GREEN EVOLUTION ARE YOU PART OF IT?

Greening  
our world,  
one wall  
at a time!

**greenology**  
The art & science of greening

According to assessments by the UN convention on Biological Diversity, urban world populations are expected to dramatically rise from 3.5 billion currently to over 4.9 billion by 2030. The area these cities take up is expected to expand by at least 150%, underscoring the importance and potential for urban greening and sustainable vertical greenery globally. This rapid urbanization comes with a host of challenges we're already facing: congestion, pollution and an upset biodiversity, among other health, environmental and social issues.

## Urban Greenery: A Key Enabler

The Urban Green Evolution is based on Urban Greenery as the bridge between Urban Architecture and Urban Ecology for a truly sustainable ecosystem. Our current urban habitats have pushed trees, vegetation and other living species out of its natural context, at times force-fitting them into our harsh urban environments and upsetting the biodiversity balance. As a key enabler bringing about human, environmental and property benefits, urban greening solutions realise urban architecture, protecting yet integrating people in their spaces with other living flora and fauna for better lives, work and play.

## Pushing Boundaries: From Green Walls To A Living Green Skin™

Urban Greenery can be meaningfully applied in novel and unconventional ways, integrated with sustainable design development principles and materials to achieve Urban Ecology in a state of equilibrium. The way forward is a living green fabric, or a tapestry that wraps around bare building surfaces, an advanced application no longer confined to manicured 2D walls but rather sculpted 3D spaces. This allows creative expression of building geometry and desired design language.

## Local change with a global perspective: It starts with you Keen to integrate greenery into your project? Consider these:

**Sustainability** A truly sustainable system recreates natural plant growth based on botanical principles, allowing them to remain productive and flourish over time. Expect ecosystems with at least a decade's lifespan; designed using recyclable materials for minimal carbon footprint.

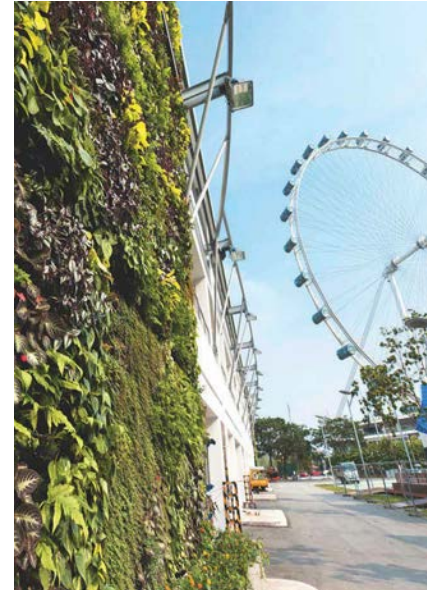
**Customisability** It's not just about green walls anymore, but Living Green Skins™ or fabric that form part of building envelopes. Versatility and ability to contour surface areas to fit design geometry are the marks of progressive systems. If you can dream it, a good system like Greenology Vertical Greenery™ (GVG) can realise it, fulfilling your architectural and design vision.

**Planting schemes** Composing the right plant palette as a balance of style and substance is critical. Successful vertical greenery set-ups not only meet aesthetic requirements of design briefs but also feature an appropriate plant mix suited to its site to nurture flora and fauna biodiversity. It takes specialist botanical knowledge, horticultural experience and unique system properties to achieve the desired diversity in vegetation, accommodating over 500 tested plant species native to climates.

**Proprietary technology and methodology** Look for the science behind systems. Specially-formulated growing media and substrate panels facilitate nutrient and water exchange for optimal and sustained plant growth, allowing roots to establish and develop naturally, unlike pot- or planter-based systems which result in root-girdling and subsequently a high plant mortality rate. Pre-growing plants offsite before installation is also important, enabling acclimatisation and vegetation to 'mat' out with dense foliage.

**Cost-effectiveness** Don't just consider the initial investment, but take a holistic view with life cycle cost. Opt for vertical greenery systems with low water consumption, integrated irrigation and fertigation for fuss-free (self) maintenance. The dollars and cents just don't add up if you've to incur incidental cost in frequent plant replacements throughout the system's lifespan.

**Specialist approach** Work with a like-minded partner who designs for the environment and sustainability, one that possesses multi-disciplinary expertise – from design and botany to landscape architecture and engineering. One that dedicates all their efforts to creating vertical greenery and urban greening solutions that last. © 2014greenology



“ We've examined numerous systems and seen many vertical greenery systems fail. Greenology's Living Skin is the only sustainable system solution that works. The iconic living installations at the F1 Pit Building in Singapore bears testament to this.

”

**Mason Tan | Managing Director**  
Mace Studio Pte Ltd  
– A boutique landscape architectural studio

Like you, Greenology is in for the long haul, building living, sustainable cities from private properties to public infrastructure. Talk to us to find out more about being part of The Urban Green Evolution.

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# WHY COMPACT CITIES ARE

# THE FUTURE

**W**ith a rapidly increasing urban population, cities have to tap limited natural resources more efficiently than ever. **Jeremy Bentham** from the Shell Scenarios Team draws on Shell's latest research to explain why resource-efficient compact cities are necessary for the future.

The number of people living in urban settings is expected to almost double to over 6 billion by 2050, which will intensify the pressure on vital natural resources, particularly food, water and energy. This will place enormous additional demands on services – both municipal and commercial – that use and supply resources, and require fundamentally new, more efficient, affordable and adaptive delivery models.

The Shell Scenarios Team has been researching these trends to better understand the challenges and opportunities for our business and the world. In a previous article for **URBAN SOLUTIONS** (“Future Cities in a Resource Constrained World”, Issue 1, July 2012), I shared insights from our research on energy use in cities. Our analysis suggested that the amount of energy used in cities as a proportion of global energy use would rise from around 66% in 2010, to around 80% by 2040. It also indicated that the increase in global energy consumption over that period would be concentrated



*More than half of global primary energy ends up wasted as lost heat...City planning can significantly improve this...*

almost entirely in cities, especially in regions entering phases of rapid urbanisation.

Our new publication *New Lenses on Future Cities* – to be launched in Singapore during this year's WORLD CITIES SUMMIT – highlights the value of compact city development for resource efficiency. In this article, I focus on how the effective management of urban change and infrastructure options could improve resource efficiency. I also highlight a possible model for compact development in existing Chinese cities to accommodate the country's anticipated phenomenal urban growth between now and 2030.

01 Impact of urban density on CO<sub>2</sub> emissions per person in Toronto.

02 Urban density and transport-related energy consumption.



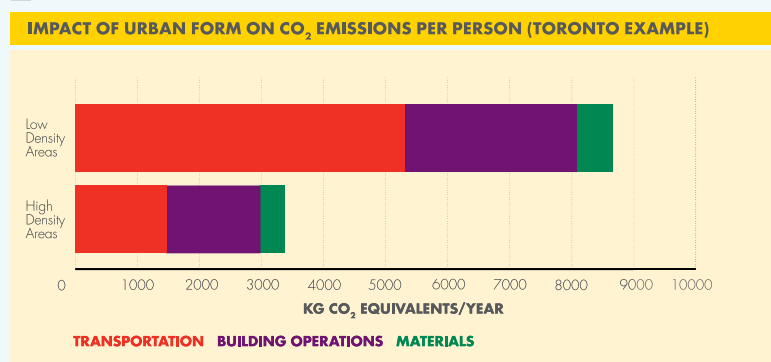
### Well-planned Cities are Resource-efficient

An estimated US\$57 trillion will be spent on urban infrastructure between 2013 and 2030. The degree to which this growth is well managed and planned will be a central factor in determining how efficiently the world uses vital resources in the future. More than half of global primary energy ends up wasted as lost heat, particularly in the transport and power sectors. City planning can significantly improve this, reducing long-term costs and energy consumption.

Compact and densely populated cities use less energy per person in transport because residents live closer to jobs and amenities. Our research shows that compact city design can reduce average annual car use nationally by as much as 2,000 kilometres per person compared to countries with low density development. Reliable public transport networks and the use of smaller electric or hydrogen-powered cars well suited to shorter distances cut energy demand further. Compact housing and more stringent design and energy efficiency standards also significantly reduce energy use in buildings.

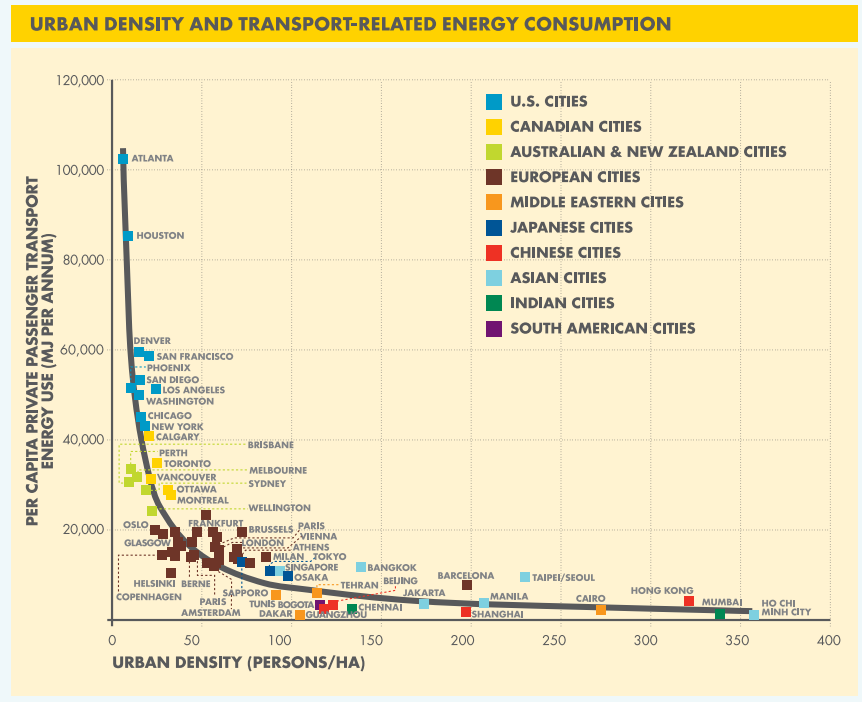
Power sector efficiency can be improved by combining heat/cooling and power generation facilities, which capture waste energy from electricity production and use it in other industrial,

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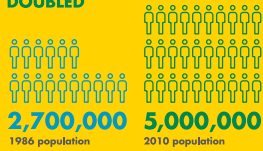
Source: Journal of Urban Planning and Development ( March 2006 )

02



Source: Newman and Kenworthy, 1989, Atlas Environnement du Monde Diplomatique 2007.

**POPULATION GROWTH  
IN SINGAPORE HAS NEARLY  
DOUBLED**



**IN SUCH A SPACE-CONSTRAINED  
CITY, AN EFFICIENT ROAD AND  
PUBLIC TRANSPORT NETWORK  
IS ESSENTIAL**

Singapore opened the first Mass Rapid Transit (MRT) line in 1987



1987

**178 km** ...if had built some 178 km of rail lines by 2013

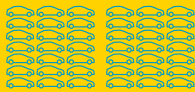


2013

**360 km** ...with plans to further expand the network to around 360 km by 2030



2030



**63%**

**OF ALL DAILY PEAK HOUR  
COMMUTER TRIPS TODAY  
IN SINGAPORE ARE MADE  
USING PUBLIC TRANSPORT.**



01

commercial and residential settings. Switching from coal to gas-fired power stations also reduces emissions and increases efficiency. Gasification of fuels, such as coal, biodegradable waste and biomass, produces a synthetic gas that combusts at higher temperatures, generating more heat and power. If combined with carbon capture and storage technology, the power it produces would be low-carbon, and if the original fuel is biomass, this would actually remove carbon dioxide from the atmosphere.

Through integration of water, sewerage, waste and power management, the substantial cooling-water demands for power generation and the substantial energy demands for water treatment

and pumping can be met more efficiently. Waste products become a source of energy rather than, for example, a landfill burden.

From a resource perspective, the ideal evolution is for cities to become increasingly compact with more efficient, integrated infrastructure and effective public transport. Cities such as Singapore, London, Tokyo and New York have demonstrated that compact cities can be attractive to residents. This can be done, for example, by providing green spaces, which studies have suggested produce a positive impact on mental health.

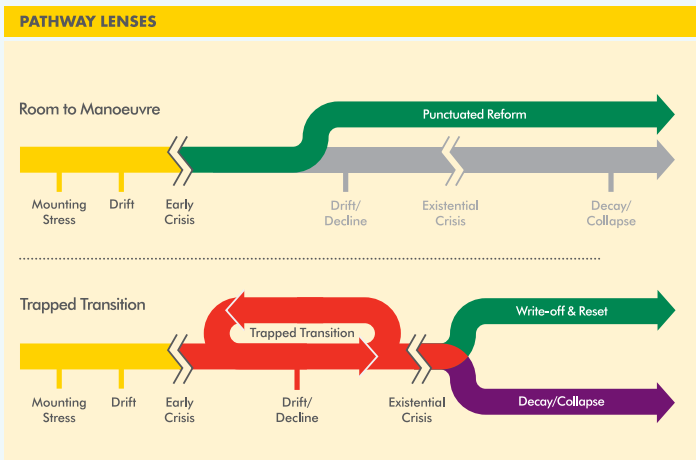
**Creating “Room to Manoeuvre”**

Shell partnered with the Centre for Liveable Cities (CLC) in Singapore to investigate the factors that shape the capacity of cities to plan and manage growth effectively. Singapore is widely recognised as having successfully managed rapid population growth whilst improving the liveability of the city. Our work drew on analytical tools – we call them lenses – that Shell introduced in our most recent long-term energy scenarios, *New Lens Scenarios*, published in 2013.

The lenses considered two typical institutional development routes that evolve in response to emerging pressures and the leadership choices that are made: some are able to adapt and reform, giving them “room to manoeuvre”; while others delay action until it is forced by growing crisis, what we call a “trapped transition”.

○ ○  
*Cities such as Singapore, London, Tokyo and New York have demonstrated that compact cities can be attractive to residents.*





02

### Characteristics of “Room to Manoeuvre” in city development:

- Visionary leadership coalitions shape growth
- Authorities foresee stresses and implement integrated land, transport, energy, water and waste planning
- Structural energy-effective solutions, including compact city development and public transport
- Knowledge shared and valued

### Characteristics of “Trapped Transition” in city development:

- Localised market forces dominate patterns of growth
- Authorities assume problems are too hard to tackle, and too unpopular to implement
- Stresses ignored until city liveability is threatened and infrastructure is difficult to re-engineer
- Ad-hoc, individual solutions

Our workshops with CLC identified five factors for well-managed growth:

#### 01 Flexible long-term vision

Urban planning decisions need to build in sufficient capacity to adapt to reflect future technology trends and stresses, while allowing for micro-level changes too.

#### 02 Invest in the future

Investments into education, capacity and innovation hubs should be made continuously, anticipating skills needed to drive future economic growth, and attracting and retaining skilled citizens and migrants.

#### 03 Capacity to implement

Nurture highly effective implementation, reinforced by transparent measurement, by having the right parties involved and finding common goals between stakeholders. Professional project management is crucial.

#### 04 Building trust

Provide a stable environment, consistency in rules and regulation, and a sense of fairness for all involved.

#### 05 Collaboration

All sections of society recognise that working together is necessary. Incentives and sanctions for consumers and businesses should encourage smart growth, infrastructure, housing and transport solutions. Coordinating bodies can help overcome disagreements and avoid paralysis.

01 Compact Singapore has improved liveability despite population growth.

02 Pathway lenses – “Room to Manoeuvre” and “Trapped Transition”.

### **Nanchong: A Compact City Model for China**

By 2030, an additional 350 million Chinese will inhabit cities. Hence, the way in which urbanisation occurs in China will have enormous impact on resource efficiency globally. In 2011, Shell collaborated with urban research and design group, the Dynamic City Foundation (DCF), to study how China might achieve sustainable urbanisation by 2030. The DCF developed a model, which progressively transforms existing low-density industrial zones into

vibrant communities, merging living and working areas. According to the DCF, if the densities found today in China's urban centres – already dense by international standards – are extended uniformly to the edges of the less dense industrial development zones around their periphery, China could accommodate all 350 million new urbanites within existing urban zones by 2030.

To show how this would work in practice, the DCF developed a template and case study for Nanchong, a city in Sichuan

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province between Chongqing and Chengdu, with 600,000 inhabitants in the urban core area. Nanchong was selected because the formation of the Chongqing-Chengdu Special Economic Zone (SEZ) in 2011 promises accelerated urban and economic growth in the region, creating ideal conditions to showcase an innovative and scalable model for sustainable development.

The first step is to conduct a detailed inventory and analysis of the city, reviewing its ecological, geographical, industrial, economic, spatial usage, energy, climate and other characteristics, identifying areas requiring immediate remediation. Flexible rezoning is then applied to locate heavy industries near industrial transport hubs and free up areas for densification, residential and commercial development while completing existing transport and road network gaps. High standards for the efficiency of building construction and operation are enforced.

“Transit-oriented development” is introduced through a secondary grid between existing major roads to accommodate future public transit infrastructures. These “eco-promenades” provide flexibility for public transport to evolve over time, making the construction of future roads unnecessary. At first, regular buses are used as a flexible, cheap option that can adapt to the existing unfinished road system. As the grid is completed and density begins to accumulate,



*... “eco-promenades” provide flexibility for public transport to evolve over time, making the construction of future roads unnecessary.*

an upgrade to a Bus Rapid Transit system becomes feasible. Eventually, an elevated subway or light rail system can be introduced if necessary. The corners of the new urban blocks created by the eco-promenades are curved to facilitate use of track-based transport like trams and allow travel speed to be maintained throughout the journey – saving time and energy. Where rounded corners meet, star-shaped parks and squares naturally arise, ensuring a continuous flow of green space across the city and providing better water management capacity.

A “time-oriented development” approach could ensure flexible integration across both space and time. The city is divided into one-kilometre blocks and teams of city planners design in relay for different blocks for different time phases in their development. Each group of planners begins by designing their designated block for today’s conditions. The groups then swap blocks and work on another team’s block for a different time phase, e.g., 2020. They then swap again and create a plan for 2030, etc. This method encourages

developers to collaborate to create integrated plans that are adaptable and prepared for changes in future conditions.

Micro-zoning is used to promote mixed-use in neighbourhoods, recognising that, by 2030, many of China's cities will have moved towards a more service-oriented economy. Stacked factories ensure more efficient use of space and resources. Star-shaped parks create quiet areas particularly suitable for residential use. This is offset by concentrating high densities on top of transportation nodes, geared towards commercial use. Combined with a public transit system that is always within walking distance, parking requirements can be cut by half. In between the eco-promenades, a micro-grid can be introduced specifically designed for pedestrians and bicycles, paved with a soft, permeable surface to help manage storm water and prevent pollutants from entering the water table. The micro-grid ensures that even in the densest areas of the city, all buildings are easily accessible by foot.

The smallest scale intervention is at the level of individual micro-plot divisions. An extra fine system of plot divisions is introduced to encourage diversity in building size and ownership. Where larger buildings are needed, a limited number of adjacent plots can

be developed as a single project. Moreover, in many instances, plots on either side of the road can be developed together. This promotes bridging and elevated structures, as in Hong Kong.

In order to create a truly sustainable urban landscape, China's new eco-city developments must also regenerate the urban core. In later stages, the eco-promenades and parks will penetrate the old city. Densities are maintained as old buildings are replaced by taller structures. In the final stages, the centre is fully integrated with a dense, modern and retrofitted downtown.

### **Collaborating for the Future**

Today's successful cities will grow rapidly, bringing new opportunities and adding significant strains to existing infrastructures. Tomorrow's success will depend on how well these are managed and how quickly government, business and civil society improve their collaboration today and enhance the wellbeing of residents. The importance of the interplay between these sectors of society is a recurring lesson from our *New Lens Scenario* work, and details of this are once again emphasised when we place the scenario lenses on cities.



**Jeremy Bentham** leads Shell's Global Business Environment team, a core corporate strategy activity best known outside the company for developing the Shell Scenarios. He graduated from Oxford University, and joined Shell in 1980 following post-graduate experience at the California Institute of Technology. He also holds a Masters degree in management from the Massachusetts Institute of Technology, where he was a Sloan Fellow. During his time at Shell, Mr Bentham has worked in research and technology development, managed refineries, delivered corporate strategy analysis, and joined the leadership team of Shell's global technology company. He subsequently served as chief executive of Shell Hydrogen before becoming head of Shell Scenarios.



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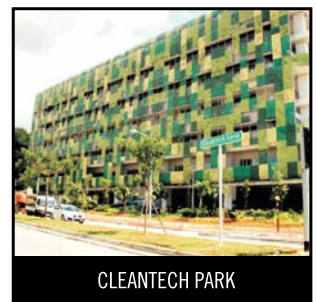
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## THE SEVEN STEPS TO

# Sustainability

**A**s fast-growing economies continue to expand and urbanise over the coming decades, sustainability challenges will only become more intense. While governments seek to improve the living standards of their citizens through cleaner growth and smarter infrastructure, businesses need to step up and play a bigger role too. **Peter Lacy** and **Ynse de Boer** explain how this can be done.

The global economy is on the wrong track, and CEOs know that business is not yet playing its full part in forging a sustainable future. This is the striking finding from our recent in-depth study of more than 1,000 global CEOs' attitudes to sustainability. The study holds lessons for businesses, of course, but also for municipal, city and national governments worldwide.

Of the business leaders surveyed in the latest triennial [UN Global Compact-Accenture CEO Study on Sustainability](#), just 32% believe that the global economy is on track to meet the demands of a growing population within global environmental and resource constraints, and over two-thirds admit business simply isn't doing enough to address global sustainability challenges.

But sustainability is firmly on their agenda: 97% of CEOs we interviewed believe that the management of sustainability issues will be critical to the future success of their business – even as they express a sense of “frustrated ambition” with the pace and scale of change on sustainability.

Besides internal initiatives – on energy efficiency, for example – CEOs believe that more is required to accelerate progress. They identify a need for greater ambition and better collaboration with consumers, investors and, importantly, policymakers, to enable business to uncover solutions to the world's most pressing challenges.





Only **32%** of CEOs believe that the global economy is on track to meet the demands of a growing population

**33%** report that business is making sufficient efforts to address global sustainability challenges



**84%** believe that business should lead efforts to define and deliver sustainable development goals



**38%** believe they can accurately quantify the value of their sustainability initiatives



**37%** see the lack of a link to business value as a barrier to accelerating progress



*...a two speed world is emerging ...with a small group of “Transformational Leaders” beginning to drive business advantage through sustainability...*

### **The Scale of the Challenge in Asia**

Asia is the world’s largest and most inefficient resource user: it requires three times as much energy input per earned dollar of GDP, and on its current trajectory is forecast to triple its carbon emissions by 2050. Furthermore, many Asian economies face a “trilemma” of challenges: rising affluence and consumption, growing resource scarcity and environmental pressures, and ongoing urbanisation at a rapid pace. These conditions are characteristic of most emerging economies – but the sheer scale of the region commands attention: of the 10 largest countries by population, half are in Asia (China, India, Indonesia, Bangladesh and Japan). The potential for transformation in Asia is formidable.

The challenge of sustainable urbanisation, in particular, presents a compelling opportunity for leading companies to step up their efforts in driving competitive advantage through sustainability.

As governments seek to improve the living standards of their citizens through cleaner growth and smarter infrastructure, the innovations of businesses will play a critical role.

Indeed, leading companies are already finding ways to turn sustainability to their advantage. We have been able to investigate links between CEOs’ attitudes and approaches to sustainability, and the financial and sustainability performance of their companies. Our analysis suggests that a two-speed world is emerging on sustainability, with a small group of “Transformational Leaders” beginning to drive business advantage through sustainability, moving beyond mitigation and incrementalism to harness sustainability as an opportunity for growth and differentiation.

So the good news is, leading companies are proving to investors and to regulators that there doesn’t have to be a trade-off between sustainability and business growth.



*Transformational Leaders are not just approaching sustainability through the lens of mitigation and incremental improvement – but investing at scale in solutions...*

## **The Seven Steps to Sustainability**

At the heart of this new approach is a commitment to harnessing sustainability as an opportunity to drive value creation through new approaches to tackling global challenges, from environmental protection and energy provision to health, education and inequality. Transformational Leaders are not just approaching sustainability through the lens of mitigation and incremental improvement – but investing at scale in solutions directly targeted at sustainability challenges. In Asia, more than anywhere else, these investments yield returns that are immediate and close to home.

From our research, we see seven key themes emerging that are enabling these Transformational Leaders to achieve both value creation for their companies, and greater impact on global challenges.

### **1) Realism and Context**

To harness sustainability as a force for transformation, organisations must first understand the scale of the challenge and the extent of the opportunities it presents.

Companies taking the most ambitious action on sustainability are also the most realistic: they are more likely to acknowledge that the world is not on track to meet the needs of a growing population – and admit that business is not doing enough. Understanding the challenge allows these companies to appreciate the opportunity for

future growth in providing solutions to sustainability challenges, and to target strategies to achieve it.

Daiwa Securities, for example, one of Japan's largest financial services companies, is an industry leader in the provision of socially responsible investment. Between 2008 and 2010 it launched eight impact investment bond products to enable both Japanese and overseas issuers to invest in sustainable initiatives in the fields of clean energy, microfinance, reconstruction, development, healthcare and education. Daiwa has handled US\$4.6 billion in impact investment bonds since 2008.

### **2) Growth and Differentiation**

Rather than simply reacting to external expectations for sustainability strategies, Transformational Leaders view the urgency of sustainability issues as an opportunity to differentiate their products and services, and thereby access new markets and industries.

Leading European electronics firm Philips, for example, has invested in the development of a green product portfolio directly targeted at customers' sustainability needs. These Green Products now represent more than half of the company's total sales, compelling evidence that sustainability is acting as a spur to innovation and growth.

### **3) Value and Performance**

From carbon emissions to water footprints, tracking environmental measures is now commonplace across industries.



For companies seeking to go beyond such incremental change, the challenge is twofold: not just to measure and manage metrics of reduction and mitigation, but also to quantify the value of sustainability to the company and to track their impact on the communities in which they operate.

Broadly, there are three ways a sustainability initiative can generate return to investors: it can contribute to revenue; it can contribute to the bottom line through things like cost reductions or greater employee

productivity; or it can have intangible impact by boosting brand value, creating future demand or aiding competitiveness by reducing exposure to risk.

One example is Siemens's valuation approach, which was specifically designed to target and measure the revenue generated by its environmental portfolio. So Siemens can tell you that in 2012, over 40% of its revenue came from products that "play a central role in environmental and climate protection".

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#### 4) Technology and Innovation

As ever-greater challenges demand ever-greater solutions, our data suggest that leading companies are turning to innovation and technology to provide the tools with which to address sustainability challenges and secure business advantage. From investment in renewables, to intelligent infrastructure enabled by machine-to-machine communications technology, to new closed-loop business models, leading companies are securing business advantage through innovative R&D and deployment of technologies ranging from industrial solutions to “smart” information communication technology such as cloud computing and analytics.

Communications technology company Ericsson, for example, is driving the transition to a low-carbon economy in Sweden through their leadership of the Smart Communication project in Stockholm Royal Seaport. Through innovation and smarter technology, the company is helping Stockholm reach its goal to be climate-positive by 2030 by mobilising a more connected city, focused on CO<sub>2</sub> reduction and sustainable transport options.

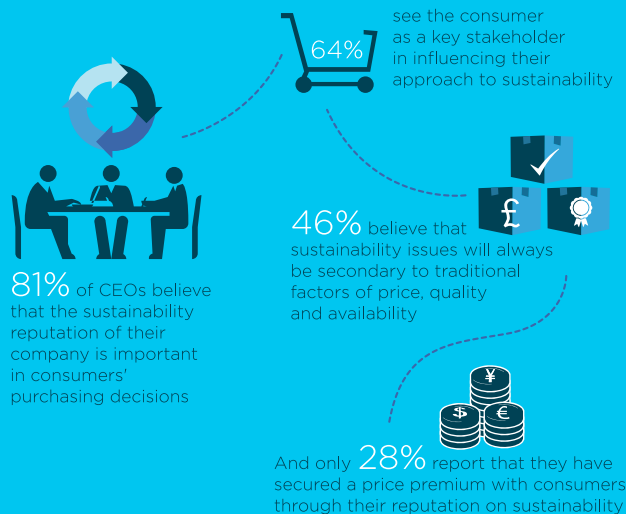
### INVESTORS: GROWING ENGAGEMENT, BUT UNLIKELY TO DRIVE CHANGE

CEOs see growing interest on the part of investors - but still don't see the investment community as an influential voice in guiding their approach to sustainability.



### CONSUMERS: INTERESTED, BUT CONFLICTED

CEOs believe that consumers will be integral to further progress - but are struggling to interpret mixed signals.





### 5) *Engagement and Dialogue*

Business leaders are more conscious of the need to establish a constructive, two-way dialogue with consumers and local communities, regulators and policymakers, investors and shareholders, employees and labour unions.

Rather than simply acting and then communicating, CEOs are actively engaging stakeholders to negotiate the role of their business in addressing global challenges. Mining companies, for example, recognise that engagement and dialogue with local communities is integral to success: with substantial investments over long time frames, leading companies in the sector are paying particular attention to actively negotiating their role in bringing employment and prosperity to local communities.

### 6) *Advocacy and Leadership*

To ensure businesses can lead the way in defining and delivering new sustainability solutions, business leaders need to provide a blueprint for change. From developing new measures of success, to engaging with public policymakers and leading calls for free and open markets, business leaders' advocacy and public commitment are integral to further progress. As Ramakrishnan Mukundan of Tata Chemicals told us, "There is no choice for businesses but to get on the road to sustainability: it is unsustainable to be unsustainable." Dr Chuchottaworn Pailin of

Thailand's PTT Public Company Limited said: "We have a responsibility to bring our industry peers on-board and move together on sustainability initiatives in order to create the level of desired impact and raise awareness throughout society."

### 7) *Partnerships and Collaboration*

In the context of intensifying pressures and flagging efforts, CEOs more readily acknowledge the role of collaboration and partnerships in meeting their ambitions on sustainability. Business can lead the way, they believe, and can maximise companies' impact through close partnerships with governments, policymakers, industry peers, consumers and non-governmental organisations. Global banking giant HSBC, for example, has embarked on its Water Programme, a five-year, US\$100 million partnership with World Wide Fund for Nature (WWF), WaterAid and Earthwatch Institute. Working with WaterAid, the programme is reaching 1.1 million people with safe water and 1.9 million people with sanitation across Bangladesh, India, Nepal, Pakistan, Nigeria and Ghana. The impact of providing universal access to safe water and sanitation in the BRIC countries – Brazil, Russia, India and China – alone is predicted to generate annual economic benefits of US\$125 billion, or 1% of their collective 2010 GDP, boosting the economic health of new markets critical to the bank's future growth.



*...business leaders' advocacy and public commitment are integral to further progress.*

## ACCELERATING PROGRESS: TOWARDS TRANSFORMATION

Leading companies are charting a path towards transformation and advantage - but sound a warning to policy makers on the need to align market incentives with sustainable development.



93% of CEOs see sustainability as important to the future success of their business



78% see sustainability as an opportunity for growth and innovation

And 80% see these issues as a route to competitive advantage in their industry



83% of CEOs believe that governments should step up their efforts to provide an enabling environment for business efforts on sustainability



### Pathways to Transformation: The Role for Governments

Through finding new ways to combine sustainability impact with business advantage today, leading companies are seizing an early advantage in the race to be the leaders of tomorrow. But there is of course, still a huge role for governments: at city and national level.

CEOs are demanding greater collaboration between business, governments and policymakers, according to our study: 42% of respondents now list governments among their top three stakeholders in sustainability, a rise from 32% in 2007. Meanwhile, 83% of respondents think more efforts by governments to provide the enabling environment will be integral to the private sector's ability to advance sustainability. Specifically, 85% demand clearer policy and market signals to support green growth. This will certainly be food for thought as this year's WORLD CITIES SUMMIT gets underway, and we look forward to what further collaboration 2014 may bring.



**Peter Lacy** sits on the steering committee of the WORLD CITIES SUMMIT YOUNG LEADERS selection committee. He is Managing Director of Strategy and Sustainability Services for Accenture in the Asia-Pacific region, an Advisor to the UN Global Compact and was a founding signatory of the UN Principles for Responsible Management Education. Mr Lacy is also a Business Fellow at Oxford University's Smith School of Economics. He tweets at [@peterlacy](#)



**Ynse de Boer** is Managing Director of Accenture's Sustainability practice in Southeast Asia. He has worked for over a decade with senior executives from a range of private and public sector organisations on sustainability, strategy and execution. His industry sector experience spans energy, waste, utilities, logistics, advertising and high-tech. Mr de Boer holds a Master's degree in Mechanical Engineering from Delft University of Technology. He tweets at [@ynsedeboer](#)





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# SUZHOU

Jinji Lake Central Business District, Suzhou.









01



**M**ayor **Zhou Naixiang** explains the innovation and transformation of Suzhou over the years. Suzhou, located right at the centre of the Yangtze Delta and south of Jiangsu province, is known for its many scenic water bodies. The city of more than 10 million citizens is also praised for its beautiful gardens and efforts in preserving its ancient cultural heritage. Meanwhile, Suzhou continues to advance with innovative technologies and strategies that promote rural and urban integration, talent cultivation and sustainable development. Suzhou was conferred the LEE KUAN YEW WORLD CITY PRIZE in 2014.





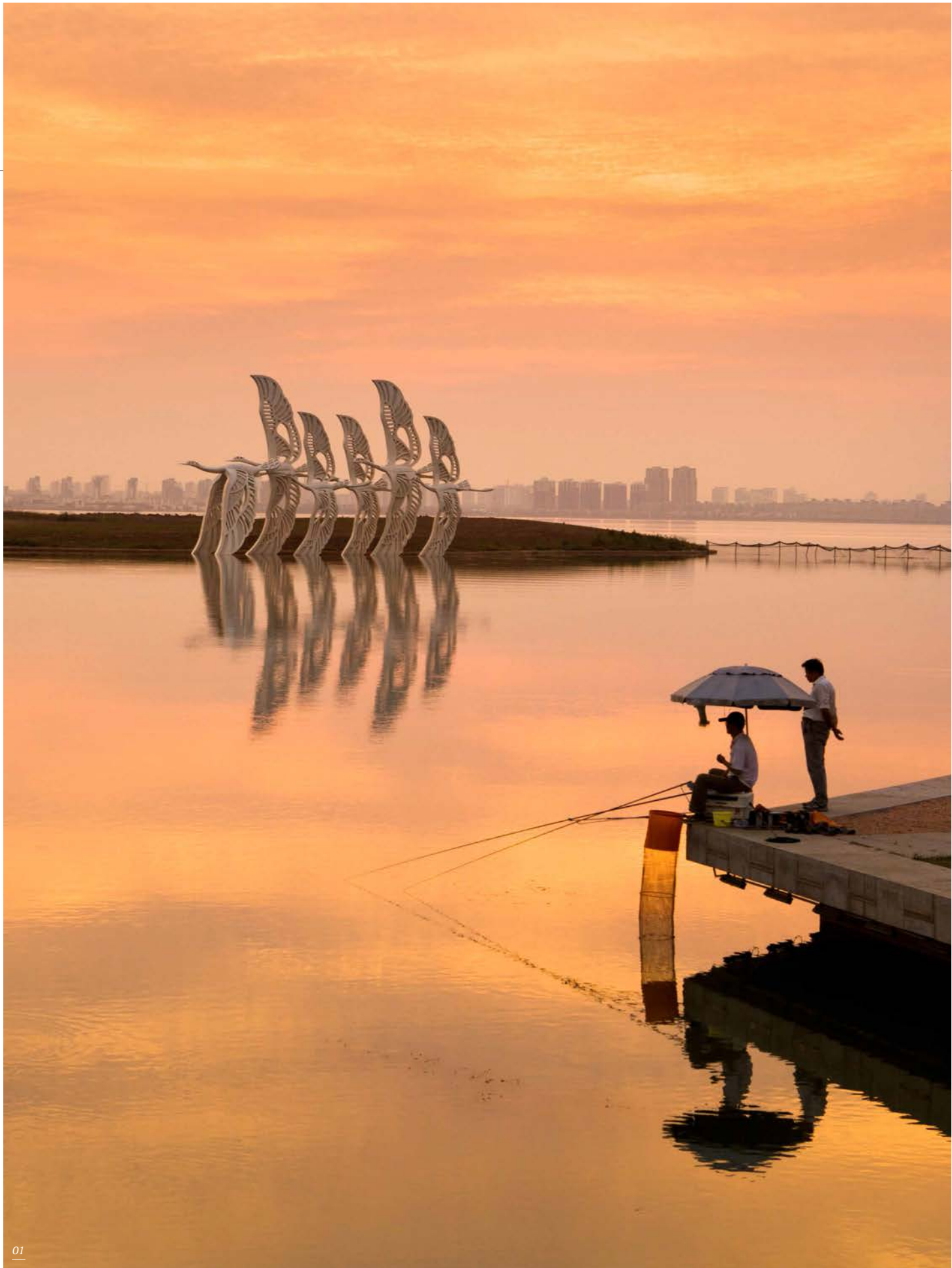
02

Suzhou, a renowned cultural city in China with a history of over 2,500 years, has witnessed sustained development throughout the ages. The city has long been reputed in China as “paradise on earth”, with its well-developed agriculture, prosperous economy, regional culture and scenic beauty. In the past three decades, Suzhou has enjoyed rapid socio-economic developments and evolved to be one of the most innovative cities in China with strong economic

vitality, thanks to its development principles of innovation and transformation. Besides taking advantage of the various opportunities history has presented it, Suzhou has been closely following a people-oriented approach and the guidance of urban planning. The city is dedicated to sustainable development so as to strike a balance among the people, between man and nature, as well as between residents and the city.

01 Pingjiang Historic District preserves Suzhou’s ancient cityscape.

02 Residents enjoying the promenade along the city’s restored Stone Lake.







02

Strenuous efforts have been made in the industrial optimisation and upgrading of Suzhou. The city boasts 12 national economic development zones; by facilitating the establishment of featured industrial parks, innovation parks and demonstration zones for intellectual property rights protection, Suzhou has tremendously enhanced the added value and level of technology in its economy. And such industrial parks and demonstration zones are actually transformed into multi-functional new urban districts. Suzhou Industrial Park (SIP) is one of the best examples. High-tech industries and modern service industries now play dominant roles in the Park and the Jinji Lake Central Business District construction makes SIP the undisputed, revitalised “paradise on earth” for both living and working.

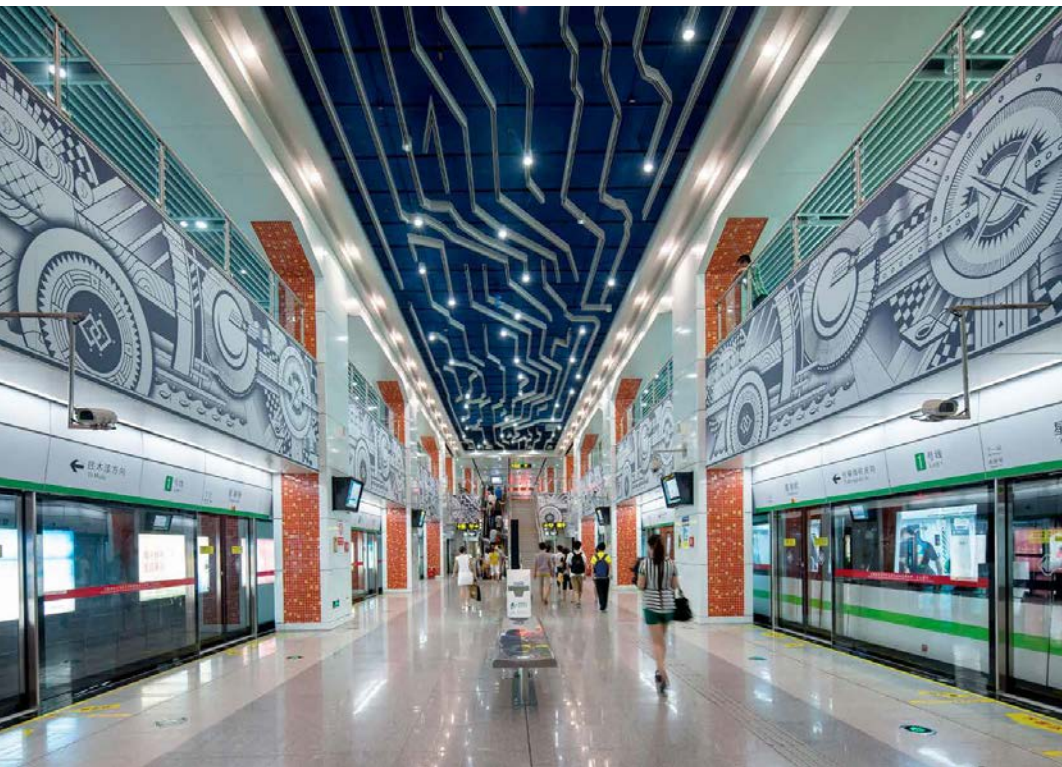
Suzhou has also been approved by the Ministry of Housing and Urban-Rural Development as the exclusive demonstration area for the protection of a historical and cultural city in China. For a long time, by observing the principles

of “repair the old, retain the old, in workable steps”, Suzhou has well preserved the original layout of the ancient city, bearing in mind its historical and cultural value, and promoted its protection and restoration in an orderly manner. The renewed Pingjiang Historic District still maintains the traditional urban layout of “water and land in parallel, river and street in neighbour” and the local architectural style of “small bridge, flowing water, whitewashed walls and black tiles”. Being a miniature of “life in Suzhou style”, the district received the Honourable Mention Prize of the UNESCO Asia-Pacific Heritage Awards for Cultural Heritage Conservation in 2005.

Amidst its rapid urban development, Suzhou has always attached great significance to the protection and optimisation of landscape, ambient air and the ecological environment in order to create a high-quality living environment. In Suzhou, there are green “wedges” on four corners, namely the Sanjiaozui area in the northwest, the Stone Lake and Shangfang Mountain in the southwest, Dushu Lake in the

01 Recreational fishing at Dushu Lake.

02 Amenities are conveniently clustered at the well-planned Suzhou Industrial Park.



01

01 The city's new metro system, Suzhou Rail Transit.

southeast and Yangcheng Lake in the northeast of the city. The Stone Lake Scenic Project is now a citizens' favourite, after a series of lakeside landscape construction that restored the lake and green land from farmlands and construction, and improved water quality.

It is through innovation and transformation that Suzhou has managed to achieve great progress in economic development, cultural prosperity, environmental protection and social well-being. Hopefully these could provide some inspiration for other cities in the world seeking further urban development.

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**Zhou Naixiang**, 53, graduated from the Nanjing Institute of Construction Engineering and the Wharton Business School, University of Pennsylvania. Previously, he was the Director-General of Jiangsu Provincial Tourism Bureau in March 2008 and Party-Secretary of Jiangsu Provincial Housing and Construction Department in July 2010. Since he became mayor in March 2012, Suzhou has accomplished remarkable achievements.





PV Vacuum Engineering Pte Ltd, whose business was founded In The Netherlands in 1938 by Jacob Pielkenrood, is now a wholly owned subsidiary of Darco Water Technology Limited.

PV forged to challenge the conventional, the accepted and the ordinary. In the process, PV find better ways of doing things by making certain that technology remains a slave to man, and not the other way round.

The result, PV's commercial vacuum / pneumatic application system represents innovation, a break from the norm, to solve environmental problems in our everyday life.

PV worked successfully with Housing Development Board of Singapore (HDB) to develop and introduce the First Central Recyclable Waste Collection System, which improve the recyclable collection by about 3 to 4 times as compare to other HDB precinct. Treelodge Punggol is The First Singapore Green Mark Platinum Public Housing Project.

## Urban-Energy Efficient Solid Waste Management System (PRCS)

### Most Energy Efficient Super Tall Building In The World

The Pearl River Tower in Guangzhou, China, is arguably one of the most environmentally friendly buildings in the World uses PV's Energy Efficient Solid Waste Mgt System. Utilising PV Sound reducing environmentally friendly refuse chute, 2 fractions of waste is collected and transported away from the building.



### Immediate Removal From Source

The PV system remove Instantaneously office waste disposed at various locations throughout the 60,000 sq.m development. to a Centralised Location-HQ Building of The Ministry Of Education-Singapore.

The system uses 42.2kw per hour only, making it One of the Most Energy Efficient PRCS system in operation.



### Tianjin Eco City, China

The PV Energy Efficient District Level PRCS system will collect solid waste within the business park utilising on average less than 100kw per ton of waste collected of energy only. It will be one of the most energy efficient PRCS system in operation in China.

## Indoor Air Quality Improvement :- The Energy Efficient Way !

### Increase Productivity using Less Energy.

Oasia @ Novena, a 428 Rooms cum Medical Suite & Specialist Clinic by Far East adopted the PV system to get rid of secondary indoor pollution caused by the exhaust of the conventional vacuum cleaner, leading to an improvement in indoor air quality. The system uses only 20.3 kw/hr (Avg). The system also increases the Productivity of its house - keepers.



### Meeting High Quality of Urban Living

Tanjong Pagar Centre, an integrated Mixed-Use development with 38 Storey Grade A Office, 100,000 sq ft of Retail/F&B, Prestigious Residence and Luxury Business Hotel.

Peaking at 290 meter, it will be the tallest building in Singapore when completed in 2016.

The development will adopt PV System to improve Indoor Air Quality, Housekeeping Productivity and meet the needs of High Quality Urban Living of its Tenant and Guest.



### Enhance Cross Contamination Prevention

The Surabaya National Hospital, Indonesia is a 38000 sq.m. 10 storey with a 5 storey Annex Building. The development adopted a "Green Building" Concept, a first in Surabaya.

PV system increases the productivity of its housekeeper, whilst at the same time reduces the risk of Cross Contamination in the Hospital.



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VIEWPOINT

# The Case for “SHARED SOLUTIONS”

by Isher Judge Ahluwalia



**C**ities face common challenges and therefore are able to learn from one another and share solutions, argues **Dr Isher Judge Ahluwalia**, Chairperson, Board of Governors, the Indian Council for Research on International Economic Relations. The economist is also a member of the National Manufacturing Competitiveness Council (India), and was a Visiting Fellow with the Centre for Liveable Cities in March 2014. After writing several books on growth in India, Dr Ahluwalia's latest work *Transforming Our Cities: Postcards of Change* is a collection of stories on the innovations across the country's urban landscape.



Whether it is water and sanitation, integrated planning of land use and transport, public housing or mobility within the city through last mile connectivity, the challenges of Indian cities and towns are no different from what most other countries are facing or have faced at a comparable stage in their development. The experiences of Singapore, Phnom Penh, Bogotá and Curitiba are only some of the many which are of direct relevance to the challenges that Indian cities and towns are currently facing. At the same time, learning what *not* to do from the experiences of certain countries is also a shared solution.

Recently, some Indian cities and towns have begun to share their solutions to the common challenges of bridging the infrastructure investment deficit and improving service delivery, often deploying new technology instruments of Geographic Information Systems (GIS), Global Positioning System (GPS), General Packet Radio Service (GPRS) and Supervisory Control and Data Acquisition (SCADA) and software packages for e-governance in the delivery of consumer services. This learning and sharing may not be fast enough, or often enough, but the process has begun.



*...learning what not to do from the experiences of certain countries is also a shared solution.*

Alandur, a small town outside of Chennai in Tamil Nadu, set an example by putting in place 100% of a sewerage network in a short period between 2000 and 2005. Chandigarh near Punjab, Navi Mumbai in Maharashtra, and Surat in Gujarat are close to fully treating their waste water. But this is in an overall context where only 30% of Indian cities are covered by a sewerage network, and only 15% of the waste water in urban India is treated. Even in Singapore as late as 1971, only 57% of the population was served by the main public sewerage network. But by 1990, Singapore had implemented its Used Water Master Plan with a 100% sewerage network and six water reclamation plants, one for each zone. This solution can be replicated in India, though the scale of the effort will be much larger. Similarly, the clean-up of the Singapore River between 1977 and 1987 provides a good example to study in the search for a holistic solution to the cleaning up of river Yamuna in Delhi and river Ganga in Varanasi. There are challenges of funding and inter-state jurisdiction, but these would seem less daunting if the planning and governance aspects were addressed effectively.



*...the Bus Rapid Transport System...in Ahmedabad was inspired by the systems in Bogotá (Colombia) and Curitiba (Brazil)...*

Again, Singapore provides an example for Indian cities looking for holistic solutions in municipal waste management and environmentally friendly waste-to-energy options. Beginning with an emphasis on waste reduction and recycling, Singapore has put in place a mix of outsourcing of waste collection for households under a regulated, uniform fee-paying system; licensing of waste collectors engaged by industrial and commercial waste generators, for whom collection fees are market-driven; and consolidation of waste collection by reducing the geographical sectors from nine to six. Incineration of the waste with due placement of filters to ensure environmental protection has been found to be the cost-effective solution for the disposal of waste in Singapore.

India's solutions for waste management have to be conditioned by the local context, including the physical and chemical characteristics of its municipal waste. The relatively high proportion of biodegradable matter in the total waste warrants segregation of wet waste and its treatment in a decentralised manner. Pune, the second largest city of Maharashtra, was one of the first cities to attempt segregation of wet and dry municipal waste at source and improve working conditions for rag-pickers to recover recyclables. The Chief Minister of Assam personally visited Pune with his expert advisors

and examined these plants and later set up three such plants in Guwahati. Kerala's government is also actively exploring this option. In another example, Pammal, a small town in Tamil Nadu with a resident population of 85,000 and a floating population of 15,000, has shown the power of community action to transform its solid waste management scenario. Its 500 green ambassadors serve Mangadu (a temple town in Tamil Nadu), Panipat in Haryana, Sangareddy in Andhra Pradesh, and Kamarhatty and Panihatty in West Bengal in adapting their model of solid waste management to local needs.

In the area of providing potable water, Malkapur, a small town in Maharashtra with a population of 40,000, has provided continuous water supply through piped network to all its residents within a financially viable framework through concrete reforms undertaken by the city government and support from the Maharashtra Jeevan Pradhikaran, a state government entity. In doing this, Malkapur drew inspiration from Badlapur, a city in Maharashtra. In 2008, ECO-Asia (the Environmental-Cooperation Asia programme by the United States Agency for International Development) had facilitated a water operator partnership between Maharashtra Jeevan Pradhikaran and Ranhill Utilities of Malaysia to implement a 24 x 7 pilot project in Badlapur, with emphasis on reducing non-revenue water.



Malkapur's success replicates what the Phnom Penh Water Supply Authority did in Cambodia, when it radically transformed a decrepit and war-torn water system known for its missing water and missing customers. At the state level, a state-wide reform programme on water and sanitation in Maharashtra has been facilitating its cities and towns to develop solutions to their challenges of water and sanitation.

A number of public-private partnerships (PPP) for drinking water in Hubli-Dharwad, Gulbarga and Belgaum have successfully demonstrated the technical feasibility of providing water 24 x 7 to all their residents in the pilot zones of these cities, but up-scaling has been slow because of the challenges of cost recovery. Nagpur is using PPP for integrated water management to deliver 24 x 7 water, while trying to address the challenges of recovering costs.

In transport, the Bus Rapid Transport System (BRTS) has emerged as a lower-cost solution in medium-sized developing cities that are not able to make large investment in underground metro railway systems. BRTS in Ahmedabad was inspired by the systems in Bogotá (Colombia) and Curitiba (Brazil), and adapted to suit local requirements. Other Indian cities such as Bhopal and Indore are following the example of Ahmedabad, although the

implementation of BRTS is not associated with integrated planning of land use and transport to harness the full benefits of the transport system. Indian cities have also generally not made extensive and effective use of Floor Space Index (FSI) in urban design and planning, although Hyderabad, Ahmedabad and Bhopal are attempting to integrate land use planning with transport planning through a flexible FSI approach and unlocking land value. A much bolder and holistic approach is needed across the urban landscape.

A major game changer in the Indian urban environment in the past decade or so has been the Jawaharlal Nehru National Urban Renewal Mission, which was launched by the Indian government in December 2005 with a commitment to finance urban infrastructure and channel the funds to city governments through state governments, provided these governments also put in their specified share of financing and agree to carry out certain reforms to improve their planning, administration and finances. The Mission has created an environment in which cities have developed a spirit to compete; they are increasingly paying attention to what is happening around them, and looking for inspiration beyond national borders.



*...cities have developed a spirit to compete; they are increasingly... looking for inspiration beyond national borders.*

# *The limits to “SHARED SOLUTIONS”*

*by Chua Beng Huat*

**S**ingapore may be a popular model of development for many developing cities, but there are limits to how well other cities can adopt Singapore’s urban solutions, argues Professor **Chua Beng Huat**, who is Provost Chair Professor at the National University of Singapore’s Faculty of Arts and Social Sciences. He also heads the university’s Sociology department and is Research Leader, Cultural Studies in Asia Research Cluster, at the Asia Research Institute. Prior to joining the university, he was director of research at the Housing & Development Board.

Every new arrival to Singapore, whether as a tourist or someone taking up residence, is immediately visually impressed – by its green lushness, orderliness, smooth-functioning transport system and, beyond the city core, its high-rise public housing estates. Singapore’s successes in economic development, urban planning and management and a national public housing programme, which houses practically the entire nation, have received frequent praise and accolades internationally.

As it becomes more and more apparent that, with few exceptions, European and American cities do not face the same level of density as Asian cities and, therefore, hold few lessons for a rapidly urbanising and economically rising Asia, urban planners, developers and politicians in Asia are turning increasingly to their own continent for points of references in their professional practices. Singapore has emerged as an eminent point of reference.



Singaporean urban planning and governance practices have thus travelled internationally to developing economies. In this travel and knowledge transfer, the Singaporean experience, which was wrought under specific historical conditions, particularly at the point of its political independence, had to be disassembled into its technical and social-political dimensions. However, since the historical conditions are not replicated (nor are they replicable) elsewhere, only the skills and technologies can be, and are, transferred and reassembled in the new locations. The result is that only the physical and material structures that resemble the Singaporean “model” are realised. The political and social dimensions of the Singaporean “model” have to be, perforce, deleted. The result is something quite different from what is going on in Singapore.

Take, for example, the high-rise housing estates that Singaporean architects and developers are producing in the region. In Singapore, it is a solution that is comprehensive and highly efficient in land use and energy consumption, because of the reduced necessity to travel far to access daily needs and routine services. Singapore’s planned new towns also accommodate a cross-



*...since the historical conditions are not replicated (nor are they replicable) elsewhere, only the skills and technologies can be, and are, transferred...*





*...in its developing neighbours...the social redistributive aspects of the Singapore public housing programme... have completely disappeared... non-replicable under different political regimes.*

section of the national population in terms of social class, race and status. But in its developing neighbours, such high-rise housing estates reappear as relatively small-scale, gated communities for the privileged new rich. The social redistributive aspects of the Singapore public housing programme, which are so critical to social and political stability and the legitimacy and longevity of the ruling government, have completely disappeared – it is not so much ignored as it is non-replicable under different political regimes.

A place can also become a point of reference through other ways, from extreme adulation that leads to the “cloning” of parts of

Singapore in a new development, to sheer rhetorical invocation. For example, the developer of Citra Raya in Surabaya, Indonesia, was so enamoured with Singapore’s urban planning, he reproduced the national icons of Singapore, including the statue of Raffles, the colonial founder of Singapore, and the Merlion, a tourist attraction, in the housing estate. A different example involves a former mayor of Bangalore. After a visit to Singapore in 1970, he tried to spur local developers to collaborate with the city, to transform Bangalore into the “Singapore of South Asia”, but without a programme of actions to produce concrete results.

Regarding referencing Singapore, China deserves particular mention. The late Deng Xiaoping visited Singapore in 1978. He was so impressed with what he saw that in 1992, during his famous “southern tour”, he instructed the Chinese bureaucracy thus: “Singapore’s social order is rather good. Its leaders exercise strict management. We should learn from their experiences, and we should do a better job than they do.” This may be read as a shaming and chastisement of the Chinese bureaucracy and its actual performance on the job.



Deng's remarks were, arguably, the background to the development of the Suzhou Industrial Park (SIP), which adopted industrial and residential planning guidelines developed in Singapore. Although its success is a qualified one, it was apparently very well received by mayors all over China. According to Singapore Prime Minister Lee Hsien Loong, during his visit to China in 2010, in every city he visited, "the local Chinese government leaders want an SIP-like park of their own." In recent years, Singapore government-linked companies have been active in collaboration with their Chinese counterparts in developing comprehensively planned industrial cities, including an Eco-city in Tianjin and a Knowledge City in Guangzhou. Both private and state-owned Singaporean architectural and urban planning companies have also benefited, receiving commissions and consultancy work, from stand-alone building projects to planning of entire housing estates, from not only the region but further afield, in the Middle East and Africa.



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Even as the Singaporean model travels to other cities via public and private parties, "Singapore as reference" should best be not taken too literally as a "reproduction" of the city, even in small measures. Rather, it should be taken as an evocation of the possibility of a better future and a provocation to achieve it, by and for others – if Singapore, a small island-nation without natural resources could succeed, "we" should be able to do the same, if not better.

That, I believe, is the spirit of Deng's exhortation to the Chinese bureaucrats.

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