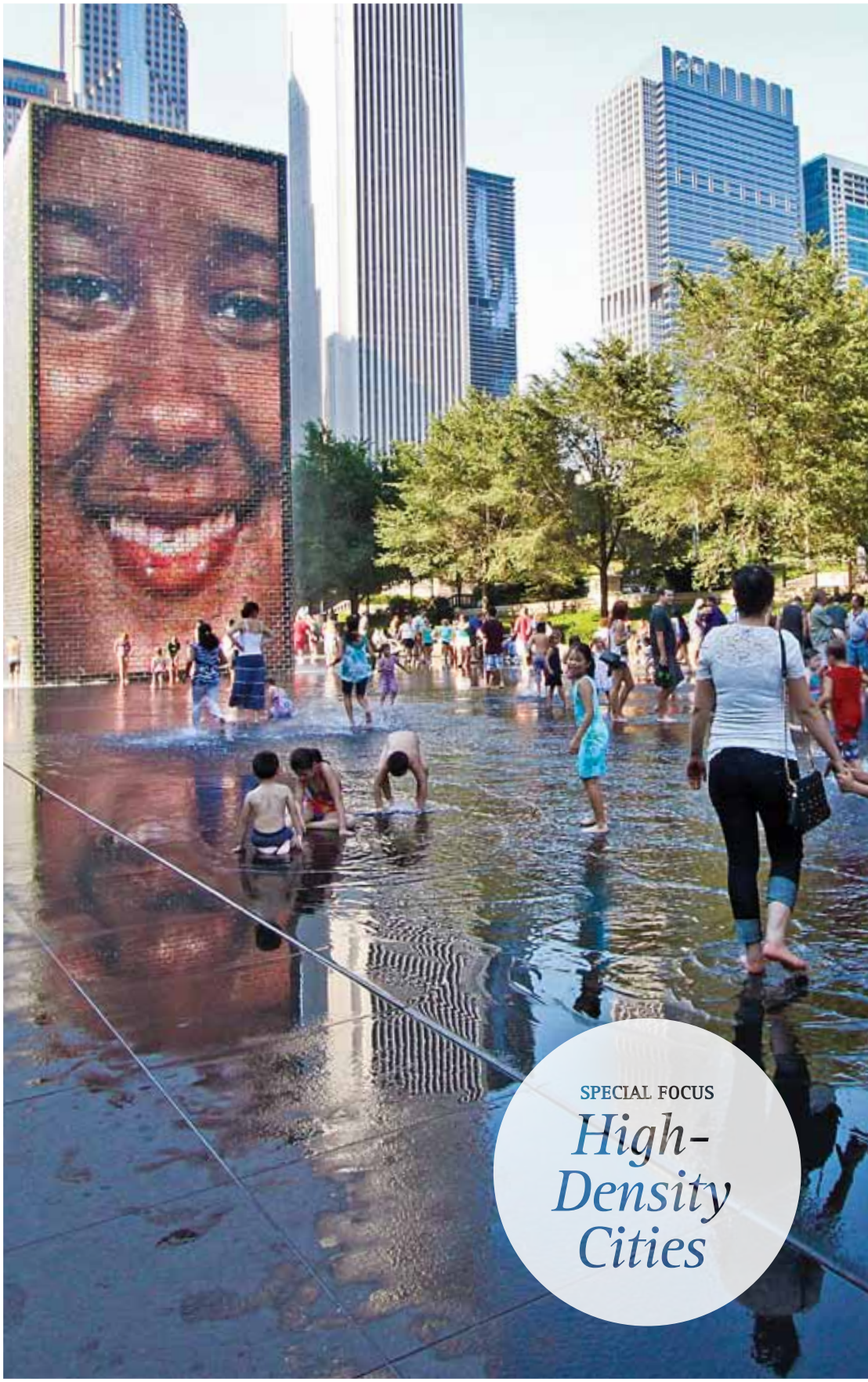
URBAN SOLUTIONS

ISSUE 2 • February 2013



A biannual magazine published by CENTRE for LiveableCities SINGAPORE

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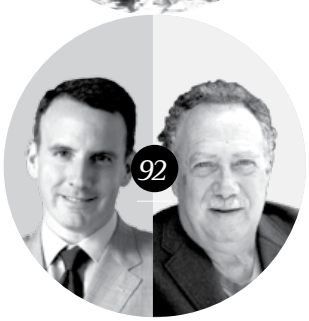

URBAN SOLUTIONS

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The Centre for Liveable Cities (CLC) was set up in 2008 by the Ministry of National Development and the Ministry of the Environment and Water Resources, based on a strategic blueprint developed by Singapore's Inter-Ministerial Committee on Sustainable Development. Guided by its mission to distil, create and share knowledge on liveable and sustainable cities, the Centre's work spans three main areas – Research, Capability Development, and Promotions. www.clc.org.sg

CENTRE for LiveableCities SINGAPORE

Cover: Crown Fountain in Millenium Park, Chicago.
Photo courtesy of Jackman Chiu.

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From the Executive Director

Welcome to the second issue of **URBAN SOLUTIONS**!

This issue, a joint editorial effort with Singapore's Urban Redevelopment Authority, has a *special focus* on high-density cities. More than half of humanity lives in cities, and this proportion will keep growing. As urban densities rise, cities can chose to promote either higher density or sprawling growth. What are the pros and cons of density? To the extent that higher density is inevitable, how can cities be more liveable, sustainable and competitive? These questions preoccupy many of us, and we have tried to explore them here.

We are proud to feature Prof Edward Glaeser and Mr Joel Kotkin, who make their cases, respectively, for and against high-density. These appear in our new *Opinion* section, where global experts weigh in on contemporary debates. In our *Essay* section, CLC and the Urban Land Institute present our joint research in '10 Principles for Liveable High-Density Cities.' We also adapt presentations on density from the World Cities Summit 2012. Prof Anthony Yeh discusses Hong Kong's experience, while Prof Marilyn Taylor's talk is presented as a photo-essay on 'Intense Cities'.

Two Singapore solutions to the challenge of density are profiled in *Case Study* – the National Parks Board's innovative Park Connectors; and one-north, a new generation research hub by JTC Corporation. Rounding up our look at density is a new series of *Illustration* pieces, where architecture firm WOHA presents a stunning vision for an extremely dense tropical city, while Asst Prof Erik L'Heureux maps how density is manifested in different ways.

Beyond our *special focus* theme, this issue contains a rich line up of thinkers and leaders. We are privileged to carry an *Interview* with Singapore's founding Prime Minister, Mr Lee Kuan Yew. We also speak with the dynamic Mayor of Quezon City, Mr Herbert Bautista. Global thought leaders Ayesha and Parag Khanna contribute an *Essay* on 'The Generative City', while our *Case Study* section showcases two remarkable success stories: Yokohama's inspiring G30 waste management programme, and Ahmedabad's transformed transport system, which helped it obtain a Lee Kuan Yew World City Prize 2012 Special Mention. Finally, our *City Focus* spotlight falls on Kigali, with a stirring article by its former Mayor, and current UN-HABITAT Deputy Executive Director, Dr Aisa Kirabo-Kacyira.

Happy reading!

Khoo Teng Chye
Executive Director
Centre for Liveable Cities

Is there a Right Density?

To many of us, urban density is mathematical: the average number of inhabitants per unit area. But are there other ways of understanding density? Architects and planners use figure-ground maps to study the relationship of built form to open space. Asst Prof **Erik G. L'Heureux** and his students at the Department of Architecture, School of Design and Environment, National University of Singapore, developed these images comparing one-square-kilometre sections of 10 iconic cities with 10 Singapore neighbourhoods. These suggest how density is manifested and experienced in different ways, raising further questions: Are dense cities always crowded? Can a crowded city be pleasant? Is there a right density for cities?

Manhattan, New York, United States of America

Telok Ayer, Singapore

Kallang, Singapore

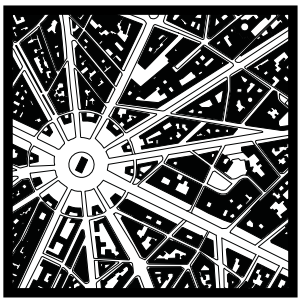
Tokyo, Japan

Rome, Italy

Chinatown, Singapore

Fort Canning, Singapore

Thanon Phetchaburi, Bangkok, Thailand


Paris, France

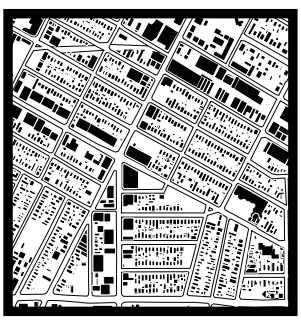

Clarke Quay, Singapore

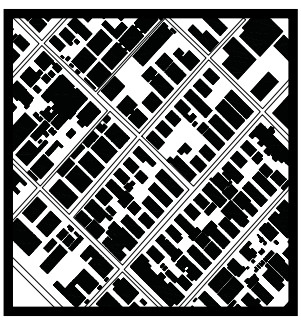

Amsterdam, Netherlands


Orchard, Singapore


Brasilia, Brazil


Tiong Bahru, Singapore


Los Angeles, United States of America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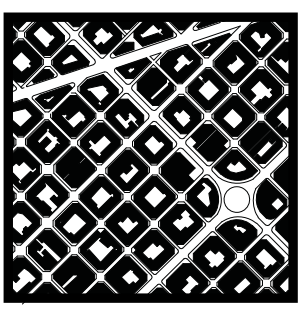
Venice, Italy

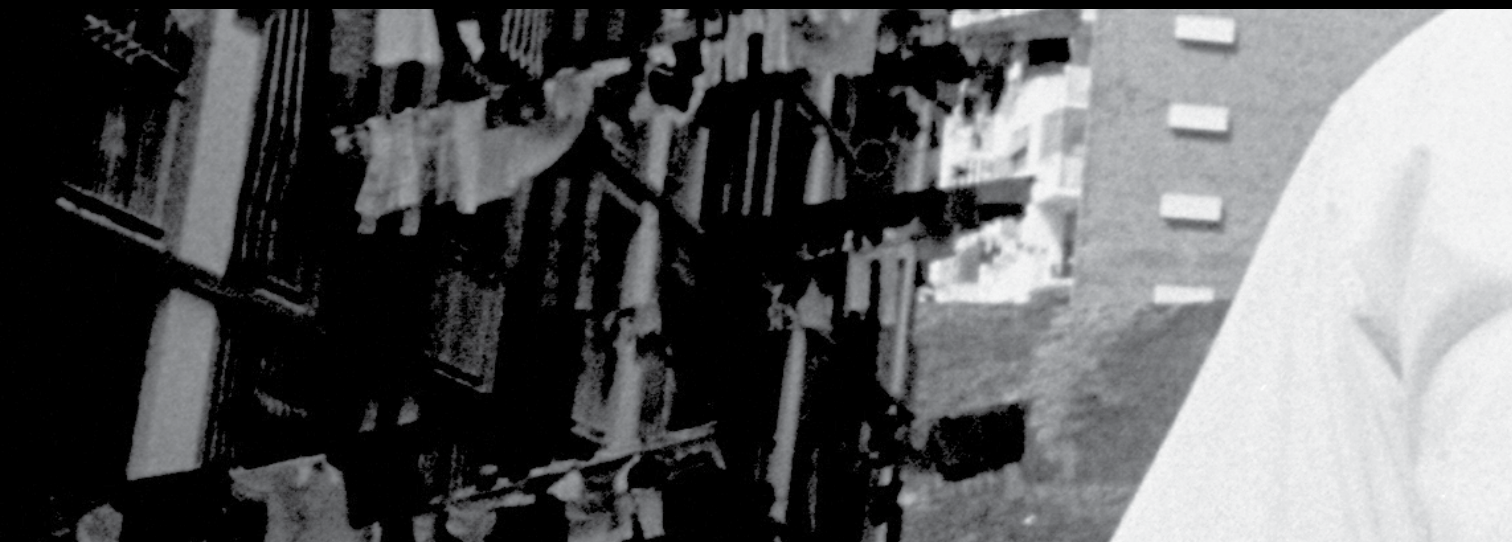

Toa Payoh, Singapore


Exiample, Barcelona, Spain

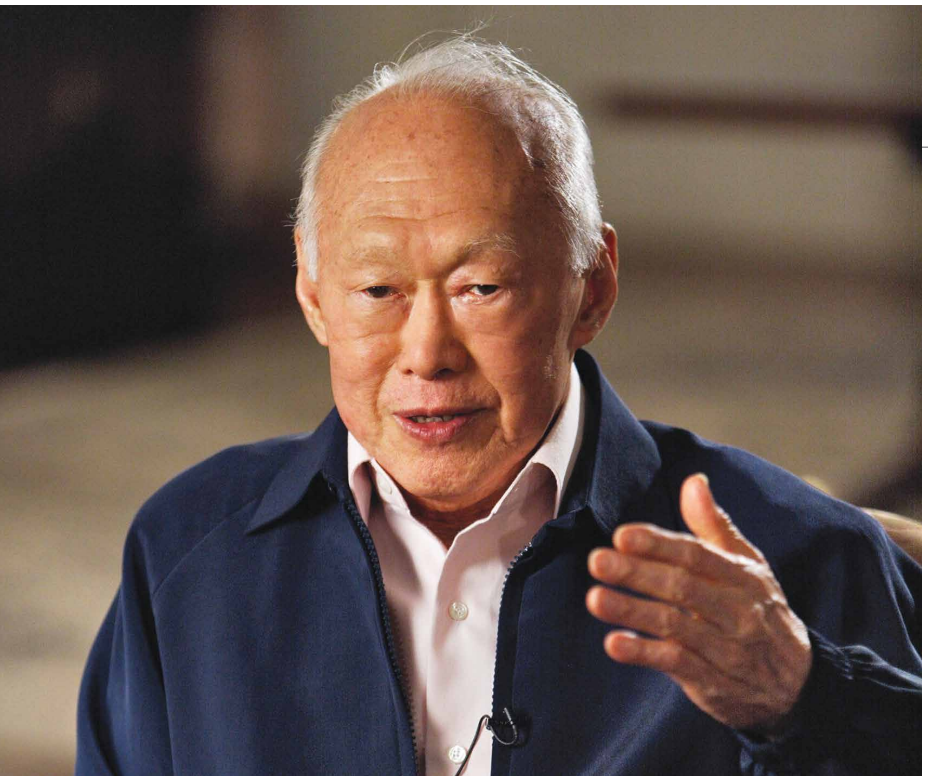

Little India, Singapore

Lee Kuan Yew: THE CHANCE OF A LIFETIME

Policy makers from around the world are often intrigued by Singapore's transformation over the last half-century, much of this under the helm of the city-state's first Prime Minister, Mr **Lee Kuan Yew**. Chairman of the Centre for Liveable Cities, Dr Liu Thai Ker, spoke with Mr Lee on 31 Aug 2012. Looking back, Mr Lee called the opportunity to redevelop the entire city the "chance of a lifetime." A Cambridge-trained lawyer, Mr Lee became Prime Minister in 1959 at the age of 36. He stepped down in 1990, but remained in cabinet until 2011 as Senior Minister and Minister Mentor. Mr Lee continues to be a Member of Parliament, in his original electoral ward of Tanjong Pagar.



Then Prime Minister Lee Kuan Yew at a public housing estate in 1965.



01

01 Mr Lee, then Minister Mentor, at an interview in 2005.

● You are certainly the key architect for the way Singapore is today. A lot of developing cities want to know how we got started. How did we get ourselves on the right footing?

I learnt from negative examples. Hong Kong has crowded, tall buildings, you seldom get sunshine in the streets, no greenery. So that's something we must avoid. I also watched how the French cities did their underground roads… and we had teams going out along the Equator to collect various plants that will thrive in Singapore so we would have variety… We are not the only city. There are thousands of other cities and we can see the mistakes they have made. We can also see what they have done right.

● What do you think were the critical success factors for Singapore?

First, you must have an efficient administration… It cannot be one-off. It has to be regularly done and there must be an organisation or several organisations that sees to this. We started rebuilding Singapore, and the two big organisations were the Housing & Development Board (HDB), and later on the Urban Redevelopment Authority (URA)… [In contrast, China faces problems with resettlement] because there is no special agency that will build the new houses and coordinate it with the road builders and the tree planters. I think URA and HDB, plus the Garden City Action Committee, played crucial roles.

Second, it must be a level playing field for all… You must have a society that people believe is fair. We have a heterogeneous population – Chinese, Indians, Malays and others – so policy is colour-blind… A crucial thing is not to allow clever developers to corner large pieces of land at critical areas, waiting for the development. We forestalled them to prevent exploitation of fellow men.[1]

Third, it must be corruption-free… The basis for that was a non-corrupt bureaucracy, especially the police, heavy penalties for corruption, rigorous enforcement of the law. Today, people accept it as a fact – you've just got to obey the law… There are no haphazard

buildings, like in Bangkok, Jakarta or even Kuala Lumpur, where you've got two tall towers and then squatters all around. There's a definite plan, and we stuck with the plan. There is no corruption and nobody can deviate from the plans. A building that is not in accordance with the plan cannot be allowed.

Those were the basics, and that's how we started.

Were there special opportunities that helped Singapore to be developed?

We became a hub because of the convenience. For shipping, you have to pass Singapore, it's the southernmost point [of continental Asia]… We were poor and we were underdeveloped, so we had to work hard… The chance [to industrialise] came with the British military withdrawal in 1971. They surrendered to us the land they were holding. So we had the Bases Conversion Unit, with [former finance minister] Hon Sui Sen as the head. He knew all about land and we entrusted to him the work of planning, where to build what on these vacant spaces.

We are not the only city. There are thousands of other cities and we can see the mistakes they have made. We can also see what they have done right.

What were the key obstacles that you faced at different stages?

The key obstacles were a lack of land, and the high cost of compensation for coastal land. So we passed a law that said that when government acquires coastal land, we compensate without taking into account that it's by the seaside.[2] The market was at an all-time low at that time and so we acquired large tracts of land. They were lying fallow – investors were waiting for the climate to change so they could manipulate and sell it at a big price. We just acquired as many large pieces of land as possible and claimed the right to reclaim coastal areas… Jurong was a swamp, which we reclaimed. I think there's a picture of me and Hon Sui Sen in Jurong and I was pointing towards it…

[1] *State land was sold with a condition that it be developed in a specified period, to discourage speculation.*
[2] *The Foreshores Act was amended in 1964 to end compensation to landowners for their loss of sea frontage.*

So the coastline changed and that accounts for Paya Lebar.
We abandoned Paya Lebar as the main airport in favour of Changi, and with the East Coast Parkway you can get from the airport to the city in 20 minutes. These are basic infrastructures. Unless they are in place, it's very difficult to overcome the obstacles, so they must be in place early. You must have the infrastructure right and that was made possible because we reclaimed coastal land without paying high compensation and so we had a brand-new airport, and a brand-new East Coast Parkway.

● I feel that land acquisition is an example of our very creative, farsighted, unconventional legal system, which is one of the key factors to our success story.[3] What would you say about that?

I anticipated these problems. At the low point [in the property market], people gave up on Singapore and said, "this place is going down the drain" and property prices went down. So I pushed this legislation through. It's probably because of my legal background that I wanted to get the legality of what we were

Singapore must retain the sense of space. We're going to build taller buildings, but we can't build them closely together.

01

[3] *The 1966 Land Acquisition Act lets government pay compensation for land it acquires based on current value and zoning. Landowners may question the compensation value, but not the acquisition itself.*

doing properly entrenched, so that it cannot be varied and changed for fickle reasons.

You've got to look ahead and forestall or preempt the problems. I mean, if we did not introduce the Certificate of Entitlement [a vehicle quota system, begun in 1990] at a time when the public could not afford cars as much, you could not do it now without a big row – because you can't get people to give up their cars. But we did it when the cars were few. Today, it's accepted as a fact. If you want the roads to be free, you've got to pay for the right to use the road.

● What are your current concerns about the urban development of Singapore?

I think the large influx of immigrants has disturbed the population. But if you don't bring in these people, at the rate we're reproducing ourselves, we will cease to exist in two generations. So you've got to balance this rate of inflow and the discomfort of seeing unfamiliar faces in crowded trains and buses. So we must have the immigrants to keep the place young, make the economy grow and look after the old. They are willing to sacrifice and work hard, they want to succeed. So they set the pace and the competition.

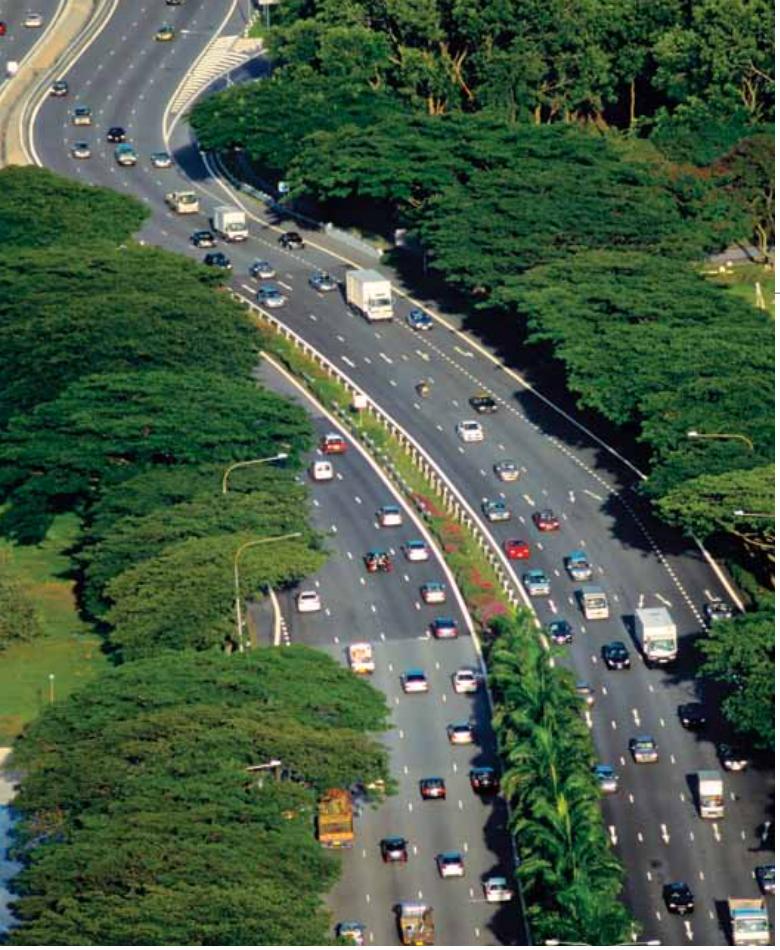
02

● In terms of urban development, what are you most pleased with?

I'm pleased that we redeveloped the city when there was a chance to do it. We knocked down Outram Prison in the west, we started from Changi in the east and worked towards the centre and rebuilt the whole city. And the big heritage sites in the city, like Fullerton Building, we left those alone. That was a chance of a lifetime.

01 The conserved Fullerton Building.

02 Mr Lee on a constituency tour in the 1950s. Courtesy of National Archives of Singapore.



01

01 Land was reserved for planting trees along the East Coast Parkway, a highway linking the city and airport, built on land reclaimed from the sea.

● Lee Kuan Yew on the ingredients of a good city:

Safety:
Create a sense of safety, a sense of feeling comfortable in this place. It is no use having good surroundings, if you are afraid all the time. I went to New York's Central Park, and you felt unsafe… The police force must be effective, not visible. We have Neighbourhood Police Posts – police who know the people in that neighbourhood, so they know when strangers come in. It is easier to prevent people from going to another place where they are not recognised and committing crimes, because if you are not from the neighbourhood and you come in, you are noticed… Today, a woman can go jogging at three o'clock in the morning, and she would not be raped. It is an essential part of a liveable city.

Cleanliness:
I used to see bushes covered with soot. So I said follow European emission standards. Lorries from Malaysia cannot come in unless they comply with our pollution standards… And consideration for neighbours – [avoid creating] noise, burning joss papers and having ash floating all over the place, upsetting people. Do not do to your neighbours what you don't want others to do to you… I went to Osaka and I could smell chemical factories. I said no, we mustn't allow that. We are a small island; unless we protect ourselves by placing the right industries in the right places – taking into consideration the prevailing winds – we will despoil the city. This could easily have become an unliveable city.

Mobility:
The city must move – transportation… I could see traffic jamming up and making travel impossible. Bangkok was an example where you had to have pot full of pee because you may be stuck in the traffic for one or more hours. The way to stop it is to limit the number of cars, so that they can flow at least at 25 miles per hour, and to improve public transport. We debated between buses and rail. I was in favour of buses because it is cheaper. But we were convinced in the end that although the cost would be high, [rail] will remove the traffic from the roads and keep buses flowing.

There must be a sense of equity, that everybody owns a part of the city

Spaciousness:
Hong Kong has crowded, tall buildings, you seldom get sunshine in the streets, no greenery… So I said alright, from west to east and east to west, we'll knock down the whole city and rebuild it. Unlike Hong Kong, we spread out throughout the island, so it's not crowded and we've got the space for greenery… For instance, while building the East Coast Parkway, they were giving enough space for planting trees along the side… Singapore must retain the sense of space. We're going to build taller buildings, but we can't build them closely together. There must be a sense of playing fields, recreational areas for children and old people – a sense that this is a full country with all the facilities which you expect of a large country but in a confined space… That is a problem which the present government must tackle – [deciding] how much population we can bear.

Connectivity:
We became a hub because of the convenience… For aircrafts, it's the efficiency of the airport and the interconnectivity. If air passengers have to stopover, they prefer Singapore. We have coaches to take them to see the city free of charge and they can stay one or two days in convenient hotels near the city. We made it comfortable and easy for the traveller and you can have a shower at the airport... Most important is connectivity. Many airlines fly to Singapore direct from other cities – that gives us an enormous advantage. If they move to Kuala Lumpur or Jakarta, then the headquarters of these companies will move… We must make it attractive for corporations that want to base here.

Equity:
There must be a sense of equity, that everybody owns a part of the city… I could see that wage-earners in Taipei and South Korea did not own their homes, they had to pay heavy rents. I aimed for a home for every family, so a large portion of their salaries need not go into paying for rents. They own it, an asset which will increase in value as the city grows… A homeowner keeps the public space around his home clean. The person who rents doesn't care, he just looks after the inside. So I said, let everybody own a home, their value goes up if the place is clean and beautiful on the outside and inside. We were asking people to get their sons to do National Service, to learn to fight for the country. Unless you give them a home, why should they be fighting?

Mayor Bautista examining produce from Quezon City's urban farms.

INTERVIEW

Mayor of Quezon City

Mayor **Herbert Bautista** of Quezon City is a professional actor and political leader. Despite being one of the youngest mayors in the Philippines, he has acquired considerable experience in government. A former youth and community leader, he was also the vice mayor for 12 years before winning the mayoral election in 2010. Mayor Bautista's urban development framework is anchored on environmental management – for which he is known as an advocate – and disaster-risk reduction. Under his leadership, Quezon City has become a pioneer city in the Philippines in implementing sustainable environmental and climate change measures.

Population
3,047,077 (as of 2011)

Land Area
161.126 square kilometres

You are one of the youngest mayors in the Philippines, but already have many years of experience in the government. What made you want to go into public service?

As a young actor, my early exposure to the performing arts exposed me to the limelight. I was given the rare opportunity to see, experience and internalise the many roles I played for the camera. The social realities that stared at me and the popularity that I gained as an actor prodded me to step up to the plate and present myself as an alternative youth and community leader. My initial entry into politics was to advocate for the cause of the youth. However, as I matured in politics, my advocacies have turned from the youth, to the environment, to integrative urban planning and a host of other issues and concerns that relate to urban and civil governance.

My stint in public service began in 1985 when I was elected National President of the Kabataang Barangay (Youth Assembly). I continued in that capacity until the 1986 People Power uprising. Under the administration of that period, I was appointed to the Quezon City Council, in an ex-officio capacity, representing the youth sector. Eventually, I became an elected Councillor (1988 – 1995), Vice Mayor (1995 – 1998; 2001 – 2010) and currently Mayor of Quezon City.

01

The social realities that stared at me and the popularity that I gained as an actor prodded me to step up to the plate.

The Philippines constantly faces the risk of earthquakes. How does Quezon City address this through its urban programme?

Quezon City's Comprehensive Land Use Plan, institutionalised through an ordinance enacted in 2011, provides the physical framework of development of the city that reconciles the thrusts of city liveability and economic resilience with disaster risk mitigation. It delineates and defines the various growth areas, while also limiting developments in areas which have high disaster-risk potential.

I have constituted a multi-department task force that accurately marks the path of the West Valley fault-line in Quezon City, and clearly identifies those properties within the danger areas. In 2011, the task force began the tagging, marking and installation of physical markers on the fault-line. We have also conducted trenching activities to more accurately study the impact of ground displacement and determine ground displacement.

I have declared those areas within the seven-kilometre stretch of the fault-line as a danger zone, with no new structures allowed within the five-metre borders of this fault-line. Those with residences and other structures there have been advised to move out. This buffer zone shall be developed as linear parks or areas for laboratories dedicated to studying earth movements and disaster mitigation measures. These measures are in addition to earthquake preparedness drills conducted in schools, offices, malls and other public places.

02

This buffer zone shall be developed as linear parks or areas for laboratories dedicated to studying earth movements and disaster mitigation measures.

You participated in the inaugural Temasek Foundation Leaders in Urban Governance Programme, and the World Cities Summit 2012 in Singapore. What did you learn during this visit that may be useful to Quezon City?

I have come to the realisation that the daunting task of managing a developing and evolving city is not actually difficult. It requires strong political will, a forward looking and long term strategic plan with identifiable key results to determine whether or not a city has reached its targets. The task of running a city does not revolve around one person only. Ultimately, it requires the participation of the whole governance team, from the department managers to the last labourer. Completing the tapestry of our vision for a progressive city demands nothing less than the full cooperation of the governance team and its customers, the citizens.

01 Mayor Bautista teaching children about tree planting.

02 Mayor Bautista marking the earthquake fault-line, prior to the installation of concrete markers.

03 Mayor Bautista presiding at the Quezon City government's Management Committee meeting.

03

Completing the tapestry of our vision for a progressive city demands nothing less than the full cooperation of the governance team and its customers, the citizens.

What are your priority issues and future plans for Quezon City as it grows?

I would like Quezon City to take advantage of the positive global perception that the Philippines now enjoys. We see this translating into sustained growth in the business process outsourcing industry, the continued expansion of the health and wellness industry, the wide-scale growth of environment-based industries, and aggressive promotion of local tourism.

01

Quezon City has allocated 113.89 hectares of its available land for development of information technology parks and buildings. The robust influx of investors in Quezon City shows that we must expand these areas even further. Our city also has the highest concentration of hospitals in the Philippines, with the biggest bed capacity. We are leveraging this to develop medical tourism.

We further seek to expand the manufacturing base in the city, which at present is rather small. For one, we are looking at becoming a centre of environmental product know-how in the Philippines, by encouraging the influx of producers of such products as solar panels; light-emitting diode or LED lights; construction materials made out of recycled resources; as well as the manufacturing and assembly of electric vehicles.

We expect these industries to generate the jobs, supplier and subcontracting arrangements, and training programmes that will enable economic gains to filter down to our marginalised population.

What is your favourite place in your city and why?

My favourite place in Quezon City is the Quezon Memorial Circle, because of its historical roots and lush greenery. It is a 25-hectare park that contains the shrine of the city's founder, Manuel L. Quezon, who was also the first president of the Philippine Commonwealth. In the original master plan of the city, it was designed to be the city's central park, the crux of the city's extensive parks system.

URBAN SOLUTIONS is aimed at mayors, urban experts and practitioners. If there is one message you can give to the leaders of the cities around the world, what would it be?

The most resilient foundations for growth for any city would be economic sustainability and its ability to prepare well for disasters. That is why these two are the key anchors of Quezon City's development.

NAME
His Excellency Herbert Constantine M. Bautista

DESIGNATION
Mayor of Quezon City

AGE
44

PERIOD IN OFFICE
2010 – present

KEY ACHIEVEMENTS

- Spearheaded a Green Building Ordinance with incentives for site conservation; sustainable water, energy and material use; and good indoor environmental quality. Building work permits now require green building certification.
- Implemented ordinances regulating the use of plastic bags, to reduce plastic waste in the city's waterways and drainage systems, amounting to 719 cubic metres daily.
- Initiated the conversion of streetlights to more energy-efficient LED lighting, as part of the World Bank's Carbon Finance Capacity Building Program.

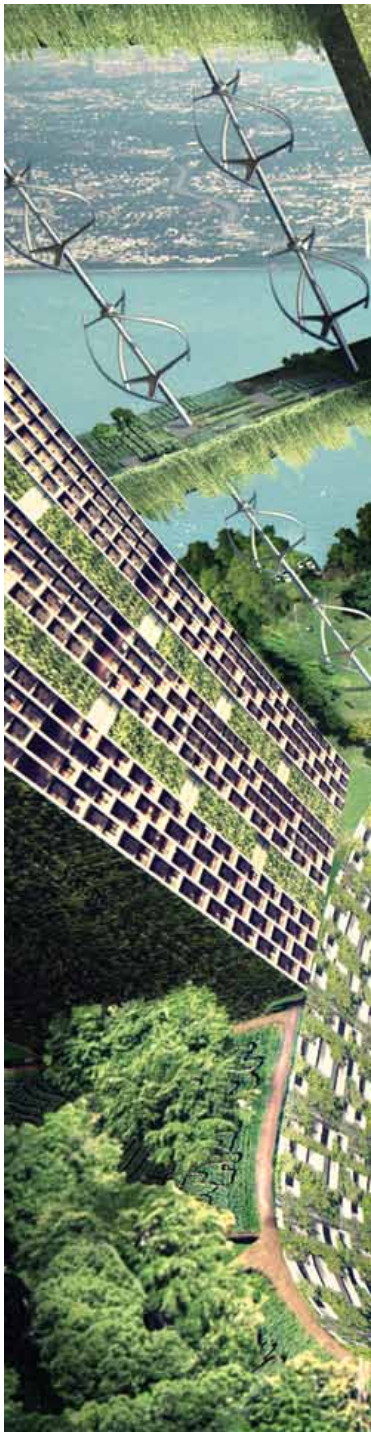
02

01 Mayor Bautista (left) at the opening of a bike lane.

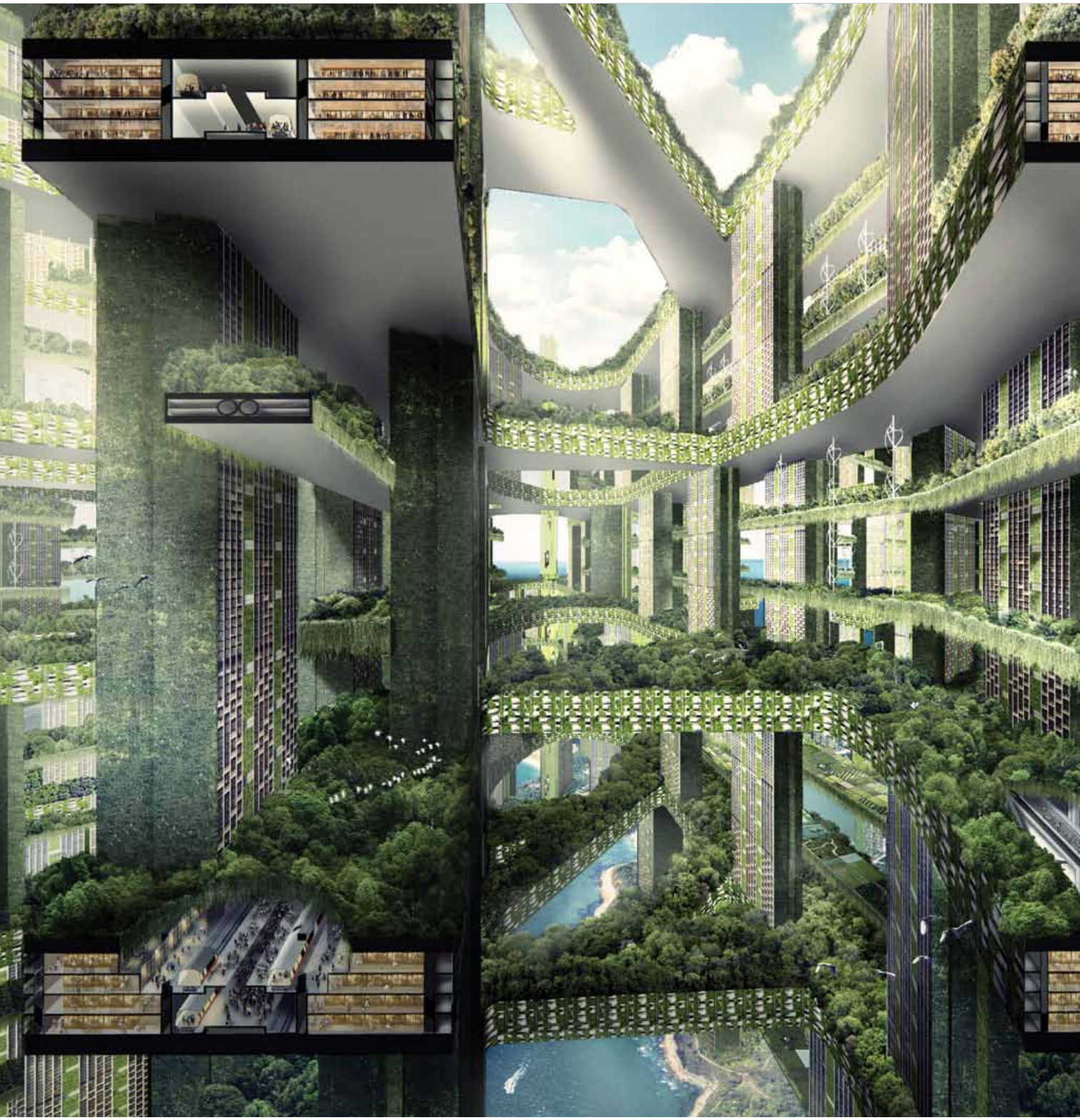
02 Quezon Memorial Circle.

Vertical Cities Asia

- **City Within a City**: Beyond form or technology, there should be innovation in the range of amenities. High density, as well as open-air living areas, sky gardens and communal terraces can make high-rises the vertical equivalents of cities.
- **Structure & Future Proofing:** A tall building could be considered a number of stacked communities, within a framework of structure, systems and aesthetics. The design and infrastructure must allow multiple configurations or additions over time.
- **Club Sandwich Approach:** Land use intensification via stacking of diverse functions enables smaller building footprints, opens ground levels for activity-generators, and maximises areas for facilities.
- **Multiple Ground Levels:** Facilities on the ground plane – like parks, streets, and other civic functions – must be replicated in the sky. The ground plane is an essential layer of the city which needs to be replicated strategically at high floors across buildings.
- **Tropical/Perforated City:** To achieve comfort without mechanical systems, high-rises can be perforated with open spaces to bring fresh air and nature into dense mega-cities, and enable quality living in an imaginative and sustainable way.
- **Breezeway Atriums:** Large elements like roof top stadiums can form umbrellas that float over the ground level, creating comfortable and delightful areas beneath for activities. Towers may be orientated to funnel prevailing winds.
- **Natural Daylight:** The proportion of high-rises must allow daylight to reach all areas. Plazas, concourses and sky terraces should ensure no dark spots in the building. Light wells/scopes can strategically bring natural daylight into central areas.
- **Greenery:** Green living walls act as environmental filters, screening off noise, glare, dust and heat, concealing services, and adding visual interest. Landscaping provides end-user enjoyment, with homes having their own little garden plots in the air.
- **Humanistic Approach:** More recreational spaces can improve economic returns, and people's well-being and productivity. Shared spaces can nurture a sense of community. Flexible floor plans or customisable façades can enable individual expression.
- **Streets/Parks/Villages in the Sky:** To address high-rise alienation, design community and social spaces in the sky. Intersperse these shared areas throughout the towers to create comfortably scaled public spaces in the sky.



Singapore architecture firm **WOHA** participated in the Vertical Cities Asia programme organised by the National University of Singapore in 2011, where it contributed a paper outlining its approach to high-rise, high-density tropical living. Developed by WOHA Directors Wong Mun Summ and Richard Hassell and Architect Alina Yeo, this paper is summarised here. These ideas are also seen in WOHA's vision of a 'Permeable Lattice City'.



Permeable Lattice City

WOHA Director Wong Mun Summ was part of the Vertical Cities Asia design competition jury. The competition brief required housing 100,000 people on a one-square-kilometre site. Without submitting a competition proposal, WOHA still took the opportunity to compare densities in different cities and buildings before producing these two images of a 'Permeable Lattice City' – its vision of an extraordinarily dense and high-rise tropical Asian city that is liveable and sustainable.

WOHA found that 100,000 people could be accommodated over four one-square-kilometre stacks of Manhattan or Hong Kong's Central district, or nine such stacks of Singapore's city centre. They could also be housed in 67 of WOHA's 'The Met' condominium in Bangkok (photo above), stacked over three tiers. Based on these findings, WOHA envisioned a 'Permeable Lattice City' with a density of 111,111 people per square kilometre.

Here, modules of The Met become 'City Columns', staggered for high porosity. City-scale cross-ventilated breezeways allow fresh air and daylight to reach every part of the inner city. 'City Columns' also free the ground for nature and heavy industries. Columns are linked by a 'City Conduit' network that serves as elevated ground levels. They are vertically interconnected by multi-cabin lifts and people mover systems, and woven socially by 'City Community Spaces'. This fully pedestrianised city negates cars above the ground level, and encourages a highly sustainable and liveable vertical city.

On the Right Track

01

01 A typical street scene before the BRTS was built.

Faced with a congested road network clogged with highly polluting private transport, the Indian city of Ahmedabad launched a highly successful three-pronged strategy to develop a world-class transport system. This helped transform Ahmedabad into one of India's most liveable cities, for which it received a Lee Kuan Yew World City Prize Special Mention in 2012.

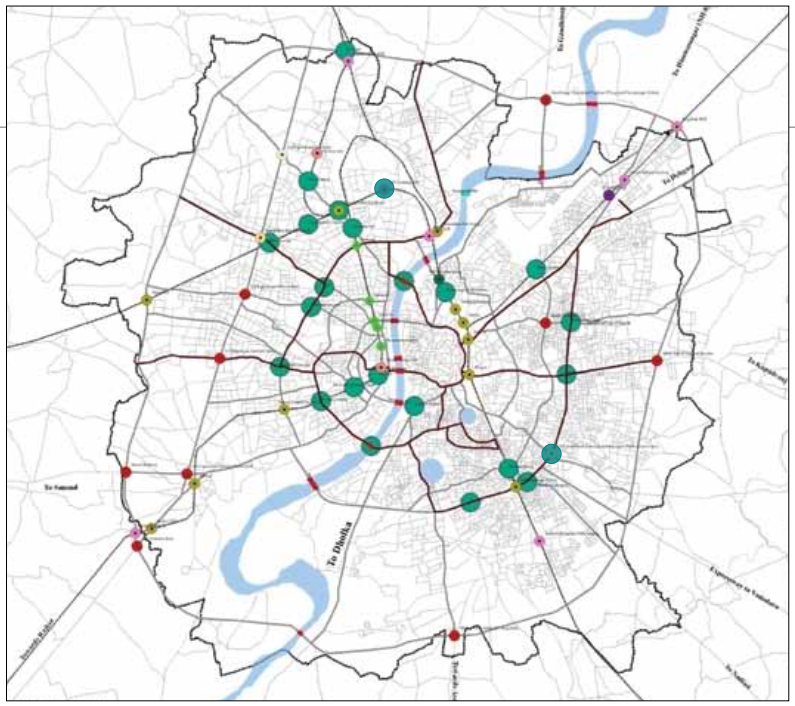
The Challenge

Around 2001, Ahmedabad's transport system was a mess. Public transport was provided by the Ahmedabad Municipal Transport Service (AMTS), a subsidiary of Ahmedabad Municipal Corporation (AMC), the body supplying various services to residents. AMTS was in a bad shape financially, and AMC had to subsidise it annually. The shrinking AMTS fleet comprised only 500 buses, and most were over a decade old.

In this context, auto-rickshaws provided an alternate means of transport for many residents. However, this raised safety concerns as overloading was common. Auto-rickshaws also often used adulterated fuel, which contributed to high pollution. In 2003, Ahmedabad was ranked India's fourth most polluted city.

Ahmedabad is India's seventh largest city and Gujarat state's financial capital. With a booming economy and easily available loans, people have been shifting to private vehicles. In 2011, there were three million registered vehicles in this city of 6.5 million people. Fortunately, the city is compact: the average trip covers six kilometres and lasts 20 to 30 minutes. Nonetheless, Ahmedabad realised by 2001 that it faced a future of high car usage and consequent problems of congestion, sprawl, pollution and increased travel times.

01



Legend

- BRTS
- Rings and Radials
- Construction Completed in the last 5 years

Transport Network in Ahmedabad

The Solution

Ahmedabad enjoyed a strong legacy of urban planning, and proactive leadership in both state and city governments. This led AMC to take a keen interest in addressing its challenges. We adopted a three-pronged strategy comprising planning interventions, technology, and improved public transport.

Ahmedabad has always taken the lead in preparing Development Plans for the city, and Town Planning Schemes for neighbourhoods. We decided to optimise the road network using provisions in the Development Plan. Traditionally, Ahmedabad has a ring and radial network. Our 2001 Plan identified additional rings, augmented by strong radials.

AMC also went beyond preparing a plan. Proposals were implemented in a fast-track mode with public participation and existing legislation. For example, the 76-kilometre-long outer ring road was built over two years, without needing land acquisition. Similarly, we prioritised proposals for new river bridges, rail over-bridges, and grade separated junctions. AMC built 22 new bridges from 2005 to 2011.

In 2001, India's Supreme Court ruled that Ahmedabad must switch to cleaner fuel technology. By 2005, we had 50,000 auto-rickshaws, of which 15,000 were over 10 years old. In a bold decision, we mandated the scrapping of all autos

01 The Ahmedabad BRTS.

01

registered prior to 1991, and asked their owners to buy modern autos. AMC helped them by working with the district administration and banks to enable easy procurement of loans. At the same time, we asked all autos registered after 1991 to convert to CNG. CNG kits were also provided at a reasonable cost.

We faced many challenges in implementing these initiatives. The scarcity of CNG filling stations hindered the conversion of auto-rickshaws to CNG, so we used public-private partnerships to create 45 CNG stations initially, which later expanded to over 75. We also tied up with banks to facilitate loans for CNG conversion.

Today, Ahmedabad's 60,000 CNG auto-rickshaws have ceased to be a source of pollution. During this time, AMC also implemented the Supreme Court guidelines for engine technology. Over the last decade, Ahmedabad first adopted Euro III norms and then Euro IV norms.

Bus ridership fell from its peak in 1981 to a low point in 2005 for several reasons; routes were introduced without proper studies; salaries became burdensome; and new buses were not added. When India's economy opened up in 1992, more people could buy private cars and motorcycles, which became more attractive than using old buses that often broke down.

01 A BRTS station.

02 People waiting at a BRTS station.

From 2005, AMTS augmented the bus fleet. We initially used a public-private partnership, where private operators operated CNG buses on fixed routes and were paid on a per-kilometre basis. AMTS staff performed conductor duties on these buses. We later purchased new buses, wholly operated by AMTS, through a grant from central and state governments. AMTS now carries over a million passengers daily, from 0.5 million in 2004. The fleet size is now close to 2,000, with 1,000 buses to be added over the next year. All new buses conform to Euro IV norms.

One of our most significant interventions has been the Bus Rapid Transit System (BRTS). We realised AMTS buses alone would be insufficient for our mobility needs. Ahmedabad needed high quality mass transit to wean people away from private vehicles. We wanted a fast, reliable and comfortable world-class system.

02

The initial feasibility study for a BRTS (since christened Janmarg) was conducted in 2005. A 90-kilometre network was identified by 2007, and the first corridor became operational in 2009. Designed as a closed BRTS, Janmarg has median bus stations, signal priority, level alighting and boarding, off-board ticketing, an Internet Traffic Monitoring System, and excellent customer service.

BRTS was an entirely new concept for residents, and many questions emerged over its planning and design. We made sure to present the idea in as many forums as possible to explain its rationale. Free rides were offered for all during a three-month trial period.

Janmarg is now Ahmedabad's lifeline. Over 50 kilometres are operational, and a fleet of 110 BRTS buses carry some 125,000 people daily. More corridors are under construction. By 2015, we expect to have a network of 135 kilometres and a ridership close to 600,000.

01 The BRTS features level boarding and alighting.

02 Other features include an off-board ticketing system, and bus arrival information displays.

01

The Outcome

Today, Ahmedabad is considered India's most liveable city. Planning interventions have ensured that people enjoy congestion-free rides, alternate routes are always available and commuting time is minimal. We remain a 20-minute city. And from being one of India's worst polluted cities, Ahmedabad is now among its cleanest, ranked below the 50 most polluted cities. Many private vehicles are now converting to natural gas or CNG.

Janmarg is considered a model BRTS. City officials from India and other developing nations often visit us to understand our system, and Ahmedabad recently hosted a BRTS conference involving cities from Asia and Latin America. Besides the system itself, Janmarg's communication strategy is acknowledged as a best practice. AMC and Janmarg have also won multiple awards, like the World Sustainable Transport Award and an award from the International Association of Public Transport for 'daring ambition'.

AMTS is now being integrated as a complementary and feeder service to Janmarg. Meanwhile, the construction of a 75-kilometre metro network linking Ahmedabad and Gandhinagar has been approved. To be completed by 2015, this marks a new chapter in Ahmedabad's transport story.

Dr **Guruprasad Mohapatra** is the Municipal Commissioner of Ahmedabad. He is a senior Indian Administrative Service officer, in the rank of the Principal Secretary to the Government of Gujarat. He had a long stint in development and regulatory administration as a District Development Officer in Surendranagar, and as the District Magistrate and Collector in the Junagadh and Rajkot districts. He was also involved in the comprehensive reforms in the power sector and restructuring of the erstwhile Gujarat Electricity Board into several commercial entities. He was the Managing Director of Gujarat Alkalies and Chemicals Ltd. and Gujarat Narmada Valley Fertilizers Company Limited. He worked as the Municipal Commissioner in Surat Municipal Corporation from 1999 to 2002. He was actively involved in converting Surat into a model of urban governance in India, with its thrust on solid waste management practices, quality infrastructure and financial management.

02

after

before
Bishan Ang Mo Kio Park

Art
Open Space Planning
Urban Hydrology
Environmental Technology

ATELIER DREISEITL

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Park Connectors

LIVING LARGE IN SMALL SPACES

The Park Connector Network is an innovative programme that allows busy Singaporeans to enjoy the outdoors more. Developed by the National Parks Board in cooperation with other government agencies, it involves the development of a green matrix of paths connecting parks and nature areas from underused spaces along roads, canals and railway corridors. The popular and relatively low-cost solution has brought recreation and nature much closer to people's doorsteps, and continues to evolve in interesting ways. In land-scarce Singapore, these spaces promote diverse benefits well out of proportion to their size – from healthier lifestyles and sustainable transport to social interaction and biodiversity.

01

01 Drainage reserves were originally set aside for canal maintenance.

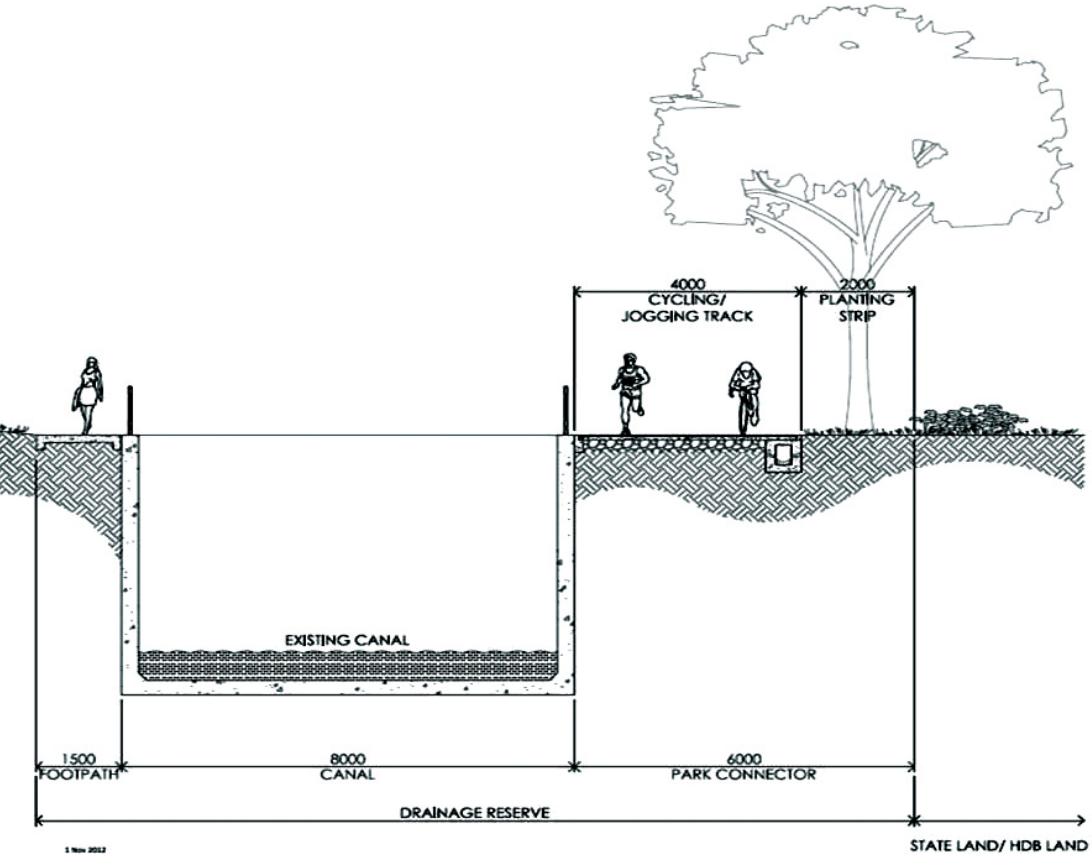
02 Canal banks often lacked shade, amenities, and natural or aesthetic value.

02

The Challenge

From the 1960s, Singapore began to systematically plant trees, shrubs, hedges and creepers across the city – along roads, bridges, car parks, fences and retaining walls. Parks were also developed or safeguarded for this purpose in city plans. Amidst rapid industrialisation and urbanisation, government leaders anticipated that these efforts would improve liveability and help attract foreign investments by differentiating the city-state as a clean and green oasis. These early initiatives earned Singapore its reputation as a Garden City.

Over the last half century, Singapore sustained rapid economic and urban growth, while its population also grew from 1.6 million in 1960 to three million in 1990 and 5.3 million today. As a result, the built environment is increasingly dense, and people have to cope with the stress of fast-paced, big-city life. In this context, the National Parks Board sought ways to keep the city attractive and liveable by bringing nature closer to people.



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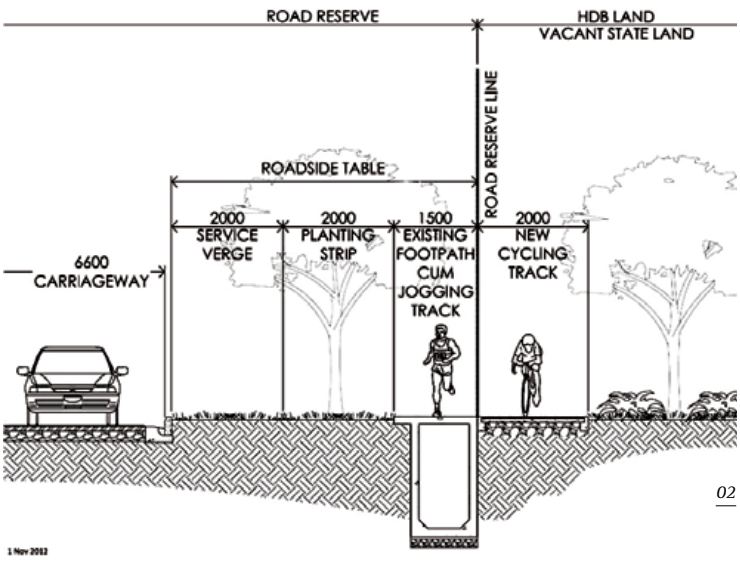

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The Solution

The Park Connector concept exploits linear spaces that are too narrow for other use, by converting these into landscaped footpaths and bicycle lanes that link parks and nature areas. These marginal spaces include road and drainage reserves, and land beneath elevated railway tracks. Typical connectors along waterways, e.g. big drains and canals, are located within six-metre-wide drainage reserves, comprising a four-metre-wide jogging and cycling track and a two-metre- wide planting strip. Roadside Park Connector tracks consist of a 3.5-metre-wide jogging and cycling track, sharing with the 1.5-metre-wide roadside covered drain. These connectors are shaded by trees in the two-metre-wide planting strip.

First-generation connectors were basic tree-lined trails, simply furnished with benches and bins. Today, where there is space, especially in adjoining developments; fitness equipment, small playgrounds and simple

03

01 Waterway Park Connector.

02 Roadside Park Connector.

03 The North Eastern Riverine Loop is the fourth and newest of the seven planned loops built.

04 Preschool children with their teacher on the Punggol Park Connector.

shelters are provided for community gatherings. Fast-growing, preferably native, trees and shrubs are planted along connectors to attract birds and other wildlife. In linking nature areas, these green corridors support biodiversity by helping wildlife access more food sources and mates. Upon maturity, the densely-planted trees form a continuous canopy that shades the foot and bike paths below.

Besides offering pleasant recreational spaces, connectors help Singaporeans – who mostly live in dense urban communities – access parks and nature areas more easily. The Park Connector Network proposal was adopted by the Garden City Action Committee in 1991. A network of over 300 kilometres was initially identified for development, to be phased in over 20 to 30 years. Where possible, routes providing a better recreational experience and more meaningful nature conservation connections are chosen. User feedback also indicates that people prefer routes along waterways. The island-wide network includes seven regional loops of between 20 to 40 kilometres each. Each loop adopts the character of the neighbourhoods and parks it links.

In terms of implementation, the biggest challenge was, and still is, finding enough space. With pavements, drainage reserves, utility service pipes and roadside greenery squeezed into the narrow spaces beside roads, it is often difficult to imagine where the additional six-metre width for the Park Connector would come from. Where there are short stretches with less than ideal connections, design and management solutions are considered, such as barriers to slow down cyclists or signs asking them to dismount and push their bikes. It is not uncommon, after months of planning effort, for some Park Connector stretches to be abandoned due to unsatisfactory connections or conditions that turned out to be unsuitable for recreation. Alternative stretches are then explored.

Park Connectors use or visually 'borrow' greenery from adjoining land as much as possible to enhance the recreational experience, achieve better conservation results and create a sense of spaciousness. An example of such borrowing is when Park Connectors adjoin public housing developments, which are not fenced up. Close cooperation and negotiation with other government agencies and private land owners is an on-going and time-consuming part of the Park Connector planning process. Fortunately, it is not unusual for Park Connectors to be laid within adjoining properties, with the consent of land owners.

04

TRY IT NOW

- Eastern Coastal Loop
- North Eastern Riverine Loop
- Western Adventure Loop
- Northern Explorer Loop

COMING SOON

- Kallang-Serangoon Loop
- Siglap-Kallang Basin Loop
- Southern Ridges Loop

01

The Outcome

National Parks Board surveys show that the proportion of people visiting the Park Connector Network has grown from 1% in 2006 to 26% in 2011. An earlier survey also revealed an increase in park visits in 2008, a year after the completion of the first Park Connector regional loop, the Eastern Coastal Loop. This suggests that, besides being appealing in their own right, Park Connectors may be encouraging more people to visit other parks in general.

Surveys indicate that people use Park Connectors mainly for exercising, such as cycling, jogging and rollerblading. People living nearby have also started to use connectors for social gatherings and even daily commuting. Given this growing popularity, Singapore's

01 Map of the Park Connector Network.

02 Cyclists along the Eastern Coastal Loop.

03 Bioswales along the North Eastern Riverine Loop filter rainwater, and provide food and shelter for wildlife.

03

public housing agency and even private property developers have started to build tracks to let their residents access the Park Connector Network. The National Parks Board is also in discussions with agencies like the Land Transport Authority to integrate intra-town cycling path networks with Park Connectors where possible, and thus offer more options for commuting as well as recreational cyclists.

The Park Connector Network has also benefitted wildlife. Surveys of various Park Connectors have turned up a total of 90 species of birds, including the White-throated Kingfisher, Grey Heron and Scaly Breasted Munia; 57 species of butterflies like the Common Mime; and 22 species of dragonflies. Some locally uncommon species that usually reside in forests have been sighted near trails bordering nature parks and reserves.

02

More than 200 kilometres of Park Connectors have now been built, with 300 kilometres to be completed by 2015. The success of the Park Connector Network has precipitated plans to develop exciting new projects, like a 150-kilometre-long Round Island Route along the coast. This will take Singapore another step closer to its vision of becoming a City in a Garden

As CEO of the National Parks Board (NParks), **Poon Hong Yuen** is leading efforts to make Singapore a City in a Garden, with pervasive greenery, rich biodiversity and a strong sense of community ownership. Before joining NParks, Hong Yuen held a number of appointments across the Public Service including the Ministry of Finance, the Economic Development Board and the Infocomm Development Authority. He also worked as a venture capitalist covering markets in Shanghai and Silicon Valley. Hong Yuen graduated with a Bachelor in Electronic Engineering from the Imperial College of Science, Technology and Medicine, UK, in 1993.

Turning Waste into Industry

Yokohama's G30 plan was created in 2003 to address rising levels of solid waste generated by an increasingly affluent citizenry. After redesigning household waste streams and working closely with citizens and businesses, G30 proceeded to break all targets with the help of stakeholder cooperation and on-going public education, resulting in significant economic and environmental benefits.

The Challenge

Adjacent to Tokyo, Yokohama is the second largest city in Japan with a population of nearly 3.7 million. Like many Asian cities, it experienced a very rapid population expansion during the late 20th century, along with a subsequent deterioration of its urban environment. The city government had previously worked extensively with a wide range of companies and residents to introduce innovative approaches on land use regulation, urban design, service and infrastructure provisions, and to facilitate a win-win situation for all the stakeholders.

Even though population growth levelled off in the 1990s to 0.5-1% per year, Yokohama continued to generate more waste due to its economic development and lifestyle changes. This consumption-driven lifestyle put tremendous pressure on the city's landfill durability.

01

01 Daily cleaning at an incineration plant.

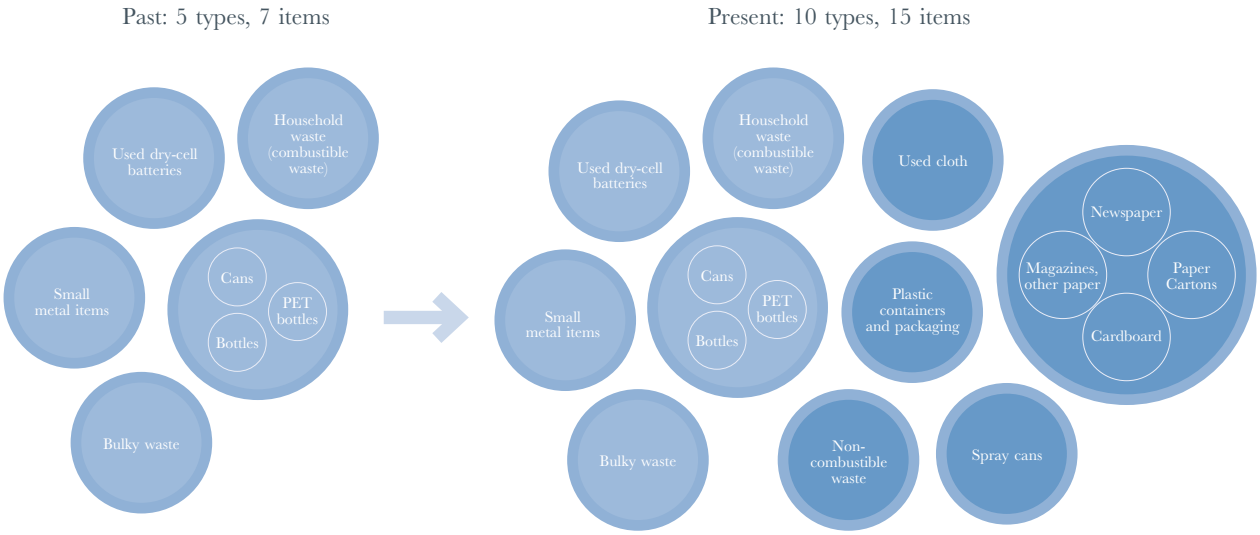
02 The Yokohama skyline.

The Solution

To reduce the environmental impact of incineration and landfill disposal, and to nudge the economy and society toward a zero-waste cycle, the city leadership initiated the G30 Plan in January 2003. Using fiscal year (FY) 2001's 1.6 million tons of waste as a baseline, it aimed to reduce waste generation by 30% by FY2010. With strong trust built up through successful completion of previous collaborative projects, G30 was designed and implemented with the cooperation of business societies and the citizens. The goal was to realise a 'sound material-cycle society' where both the environmental impact, and energy and resource consumption was reduced. The idea was based on 'polluter-pays' and 'extended-producer responsibility' principles.

After identifying the responsibilities of the stakeholders, which were households, business societies and the government, the G30 Plan then stipulated that citizens, companies, and the city administration work together to promote the 3Rs (Reduce, Reuse, and Recycle). Citizens were required to adopt an environmentally-friendly lifestyle and participate in rigorous sorting of their garbage. Companies were encouraged to design and produce products which reduced waste emissions and enable environmentally-friendly disposal.

02



Waste Segregation Scheme

The city administration had to create social systems for the 3Rs, raise citizen awareness, and disseminate and exchange information.

Existing combustible household waste was divided into more categories and a more active recycling scheme was implemented. The new recyclable items were segregated, collected separately and recycled through newly established or enhanced recycling business entities. Yokohama citizens were requested to separate waste into 15 categories and properly dispose of each one at designated places and times. Clear trash bags had to be used so that unsorted waste could be spotted easily.

To disseminate the G30 approach and achieve the goals, the City conducted environmental education and promotional activities to enhance public awareness. More than 11,000 seminars were held over a two-year period at neighbourhood community associations (80% of Yokohama's population are members) to explain how to reduce and segregate waste. About 600 campaigns were held at railway stations, and more than 3,300 awareness campaigns were organised at local waste disposal points. Campaign activities also took place at local shopping streets, supermarkets, and at various events. Local school and community based environmental groups were

01

02

enlisted, to create a supportive and collaborative environment. Citizen volunteer 'garbage guardians' explained proper sorting measures to citizens and sought cooperation from those who were not supportive of the new segregation measures. The G30 logo was displayed on all city publications, city-owned vehicles, and at city events. A G30 mascot character was even created.

Initially, some citizens and businesses naturally resisted the new waste sorting rules, which were tougher to observe compared with pre-G30 standards. Since this was the priority project for the city's leadership, public outreach and waste management rules were implemented consistently and firmly. At the same time, achievements, successful collaborations, waste reduction and financial information related to G30 were widely shared. With these efforts, businesses and citizens developed confidence in G30.

The City did not pick up waste which was not properly sorted. For example, about 10,900 items per day were not collected in FY2009. The City introduced stricter inspections of private waste collectors and stopped receiving wood chips and recyclable paper at incineration plants. Garbage collection companies were instructed to return waste to firms and institutions if large volumes of inappropriate waste were discovered. While the City had the authority to impose fees and penalties for non-compliance, this rarely happened. In addition to the regulatory activities, the City continued to conduct public education outreach for students, and provide support for elderly and disabled people who had difficulty carrying waste to pick up points.

01 Mayor Hayashi (second from left) leading the G30 campaign with the cast of the musical *Cats*.

02 Explaining the waste segregation scheme to citizens.

01 Demonstration at a nursery.

The Outcome

The figures speak for themselves. Yokohama's 30% waste reduction target was achieved in FY2005, five years ahead of target. Despite the population growing by 170,000 people during this time, waste generation was reduced by 43.2% by FY2010. As a result of waste reduction, Yokohama's two landfill sites still had 700,000 square metres in remaining capacity in 2007, thereby postponing development of new landfill sites. Yokohama also went from using seven incinerators in 2000 to just five in 2010 due to waste reduction. This saved US$1.38 billion in capital expenditure, and over US$7.5 million in annual operational expenditures. The waste that was reduced between FY2000 and FY2009 was also equivalent to avoiding 280,000 tons of CO_2 emissions.

Stakeholders, particularly citizens and the private sector, playing an active role was key to the success of the effort. Substantial and consistent efforts were needed at grassroots levels to raise awareness and change behaviours. The measures in Yokohama did not require new technology or huge investments. This showed that local governments can count on citizen power once people understand the issues, change their behaviour, and become active players in implementing plans.

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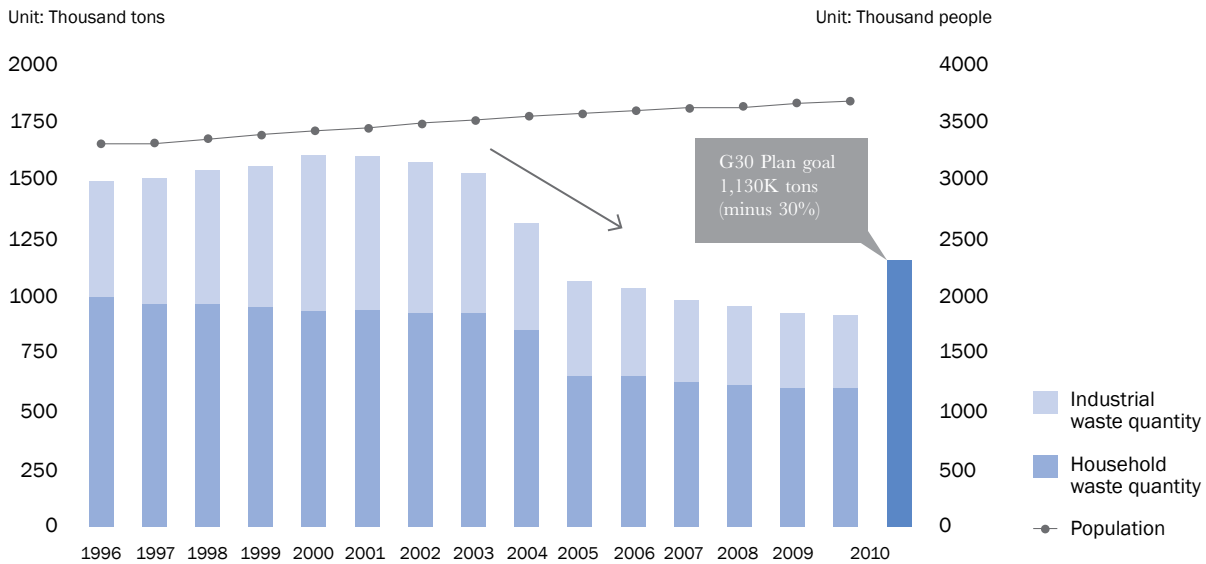


Waste Generation and Reduction Trends between 1996 and 2010

Yokohama's new businesses profit by selling recyclables, such as cans, bottles, and papers. Some companies also transform paper and plastic into fuel. These recycling businesses are ready to launch operations regionally and globally, using green growth principles. International organisations such as The World Bank recognised Yokohama for balancing ecological achievement with economic development. Yokohama shares its experiences, expertise and technical knowledge with leading private sector firms through an initiative called Y-PORT; Yokohama Partnership of Resources and Technologies.

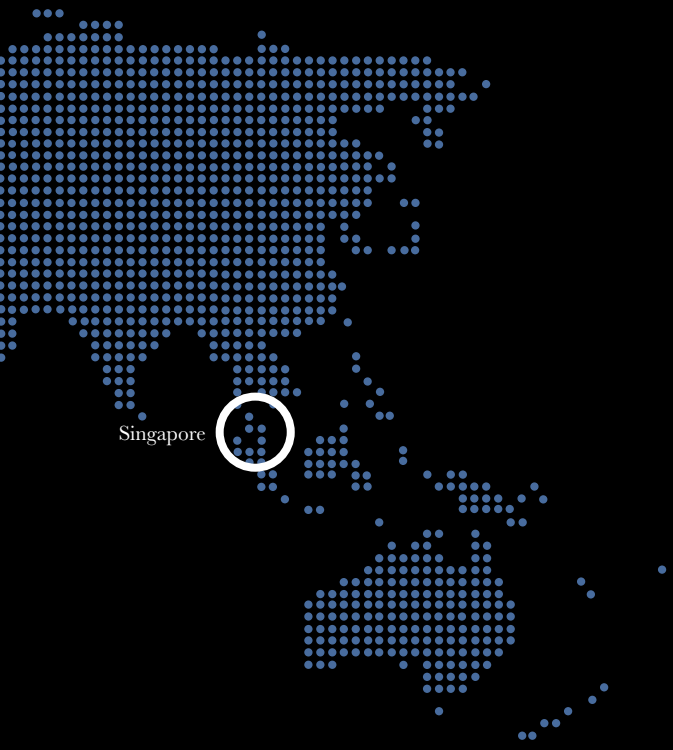
Yokohama now aims to reduce greenhouse gases (GHGs) to support Japan in its national GHG reduction target and demonstrate that it is an 'Environmental Future City'. Further solid waste management is planned using the new 'Yokohama 3R Dream Plan', created in 2011, which will enable further solid waste reduction, using FY2009 as baseline to achieve 10% waste and resource use reduction, and 50% GHG reduction by 2025.

Mr **Nobuya Suzuki**, Deputy Mayor of Yokohama since April 2012, was born in 1955 and has been employed by the City of Yokohama since 1978. He has been in charge of many projects, including housing policy planning and redevelopment of the Yokohama station areas. Experienced in urban planning with strong ties to the regional community, he has held the posts of Director-General of Housing and Architecture Bureau.

one-north

TURNING DENSITY INTO ADVANTAGE

As the national custodian and developer of industrial space and solutions, JTC Corporation develops land and infrastructure for Singapore's economic development, and seeks to maintain the city-state's competitive advantage, despite its land scarcity. Since Singapore began moving towards a knowledge-driven economy, JTC had to adapt the industrial landscape to support new industries. one-north was conceived as an integrated R&D 'city within a city', with a high-density, exciting and conducive work-live-play-learn environment that would attract global R&D activities and talent.



02

The Challenge

Industrialisation drove the engine of Singapore's rapid economic development for two decades since the early 1960s. This was supported by the Jurong Town Corporation (now JTC Corporation), a government agency that prepared land and developed standard factories and flatted factories in the sprawling Jurong Industrial Estate and elsewhere to provide the necessary physical infrastructure for industrialisation. The quick start-up and plug-and-play industrial environment quickly gained the confidence of overseas industrialists who were also drawn to Singapore's lower costs.

The pace of industrial growth accelerated rapidly in the 1970s and early 1980s. However, as lower cost regional countries started to compete for similar investments, it signalled the need for Singapore to move up the value chain, from low-cost manufacturing to a knowledge-based economy that could sustain higher wages and land costs. JTC developed the first generation of science and technology parks, beginning with the Singapore Science Park in the early 1980s.

By the 1990s, Singapore had intensified its efforts to become a knowledge-based global economy to ensure its competitive edge. As the quality of its industrial infrastructure has long played an important role in differentiating Singapore, as well as to use limited land more productively, JTC had to rethink its approach. It had to go beyond just providing efficient infrastructure and move towards optimising land use and providing innovative industrial infrastructure solutions, in tandem with the move of the economy upstream.

01

01 Aerial view of the standard factories in Jurong Industrial Estate in the 1960s.

02 Singapore Science Park, built in the early 1980s.

01

The Solution

one-north is an excellent example of a new generation integrated research business hub, designed to serve new growth knowledge clusters such as biomedical and engineering sciences, infocomms and media. It also exemplifies Singapore's cluster development strategy, as part of a broader national industrial policy. The strategy facilitates the sharing of core capabilities and infrastructure between industries within targeted clusters, thus sharpening Singapore's competitive edge by creating value-added synergies for investors.

The 200-hectare one-north site is at the heart of a technology corridor first envisioned in Singapore's 1991 Concept Plan. It is close to the National University of Singapore, the teaching hospital at the National University Hospital, INSEAD Business School, Singapore Polytechnic and the Singapore Science Parks. This co-location of industry and academia, public and private sectors, facilitates synergies and a culture of collaboration.

It is also a 'city within a city' where knowledge workers work, live, learn and play in a dense, vibrant community. At one-north, JTC has shifted from purely providing hard infrastructure to also developing the soft aspects that makes a place liveable. From the master plan – by Pritzker prize-winning architect Zaha Hadid – stage in 2001, one-north has redefined ideas of what an industrial park should be.

02

Sited on a natural undulating landscape, one-north has three distinct clusters – Biopolis, Fusionopolis and Mediapolis – each with dedicated buildings. They form the central arteries of a dense network of social, commercial and residential nodes. Some developments include The Star, a civic-cultural-retail complex and The Rochester, a mixed-use development with a business hotel, condominium and shopping mall.

In the midst of the new developments, there are also conserved 'black-and-white' style colonial bungalows – former military barracks at Rochester Park and Nepal Hill which have been transformed into a leadership and training development hub, and a chic restaurant and bar enclave, respectively – and low-rise colonial apartments at Wessex Estates, that lend a depth of heritage and charm.

Within the densely built environment, a 16-hectare park links all the clusters within one-north. It creates a scenic contrast to the heritage bungalows and new state-of-the-art buildings. It also provides a welcome respite for people to unwind and interact. In one-north, JTC has created an intensive and variegated multi-use environment conducive for people to work, live, learn, and play. This raises its appeal not only to potential investors, but also to the globally mobile talent required by knowledge industries.

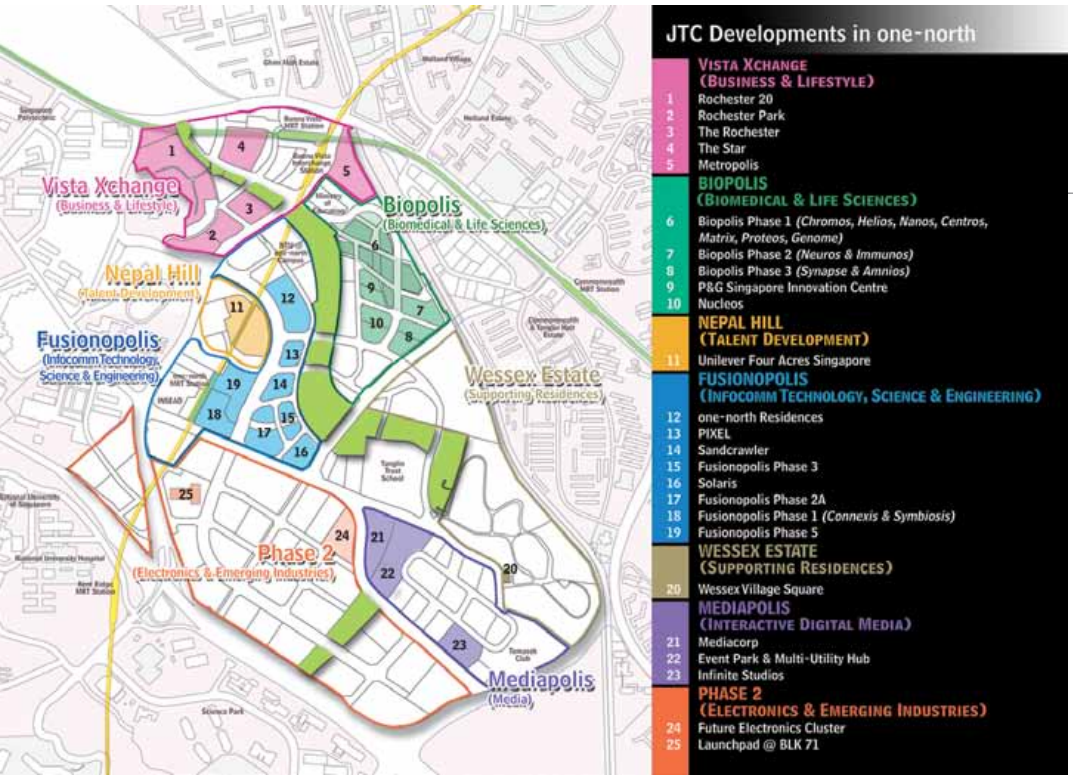
Beyond physical infrastructure, JTC is promoting innovation in one-north through the EXCITE programme which was initiated with several other government agencies. EXCITE@one-north supports the industry development strategy by providing companies with opportunities for on-site test-bedding, showcasing and commercialisation of ideas. Current test-bed projects include an RFID-enabled bike share programme and an electric vehicle sharing scheme, which offer 'last mile' connections between the subway and work locations.

01 Biopolis

02 The park at one-north.

03 The conserved 'black-and-white' bungalows at Rochester Park.

03



01

The Outcome

Today, Biopolis is an established enclave for biomedical sciences, housing private and public sector research institutes with over 260,000 square metres of space. An iconic two-tower building with over 120,000 square metres of space developed by JTC is the hallmark of Fusionopolis. Several new developments are underway in Biopolis and Fusionopolis. This includes Fusionopolis Phase 2A, which will comprise three towers and house several research institutes of Singapore's Agency for Science Technology and Research. Leading companies such as GlaxoSmithKline, Novartis, Merck, P&G and Double Negative have established their operations in Biopolis and Fusionopolis to take advantage of the unique environment, shared facilities and opportunities for collaborations.

The 19-hectare Mediapolis is set to become a media eco-system anchored by shared facilities such as soundstages, advanced digital screen studios, motion capture studios, and broadcast facilities. Key media companies that have already announced major projects at one-north include the globally renowned Lucasfilm, Infinite Studios, Mediacorp and a suite of new media start-ups.

Moving forward, the one-north Masterplan 2020 vision aims to enhance connectivity within one-north and beyond. JTC is currently conducting feasibility

02

01 Map of one-north.

02 Food court in Fusionopolis.

studies for a development that decks across the air space above the Ayer Rajah Expressway. If found viable and implemented, it would create new space and provide better physical connectivity between one-north and the Science Parks. This would help spur greater multi-disciplinary collaborations and seed new industries.

At every stage of Singapore's economic development, JTC has had to stretch its imagination and dream up new ways to differentiate Singapore and overcome its land constraints. one-north is an excellent example of an innovative solution in response to Singapore's challenges and opportunities. Here, density has been used to enhance vibrancy, sustainability and synergy, as well as optimise the use of limited land. The growing presence of global and local companies and talent in one-north attests to its success in contributing to the growth of important new economic sectors for Singapore, while improving the liveability and sustainability of the one-north community.

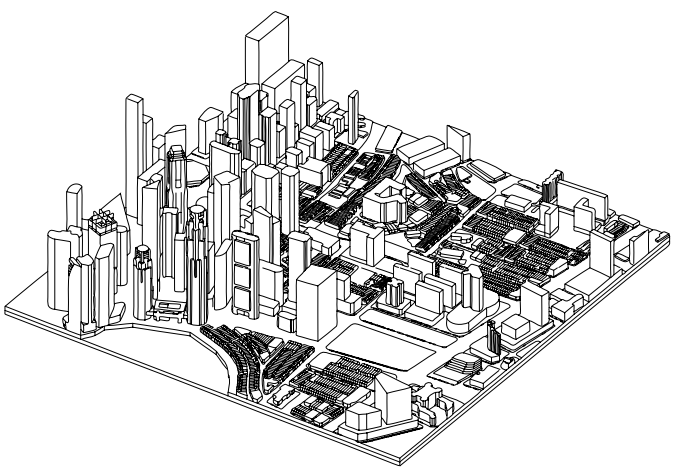
Mr **Manohar Khiatani** is the CEO of JTC Corporation. JTC is the Singapore Government's lead agency to plan, promote and develop key industrial infrastructure and facilities, in support of economic development. Prior to joining JTC, Mr Khiatani was the Deputy Managing Director at the Singapore Economic Development Board (EDB). He joined the EDB in 1986. Between 1994 and 1999, Mr Khiatani was Managing Director of Preussag SEA. He returned to the EDB in 1999. Mr Khiatani, a Singapore Government Scholar, holds a Masters Degree (Naval Architecture) from the University of Hamburg, Germany. He attended the Advanced Management Program at the Harvard Business School in 2006.

Singapore Samples

Density can take diverse forms. Asst Prof **Erik G. L'Heureux** and his students at the Department of Architecture, School of Design and Environment, National University of Singapore, developed this set of five axonometric drawings comparing one-square-kilometre plots of five different neighbourhoods in Singapore. These range from high-rise public housing in the Jurong West township to the spacious houses of the Bukit Timah suburb. In the Central Business District and Little India, modern high-rises stand alongside low-rise conserved buildings. Depending on a society's values, a dense city can still preserve its heritage or provide varied housing options for its people.

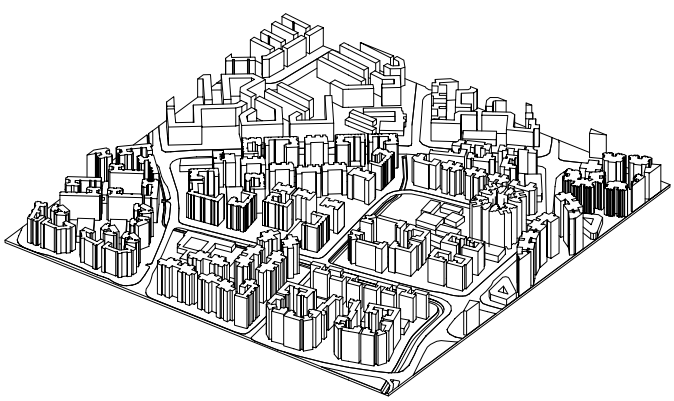
CBD

Population
238,442
Total Open Space
594,036 m^2 – 59%
Footprint of Building
405,964 m^2 – 41%
Total Floor Area
3,576,632 m^2 – 358%



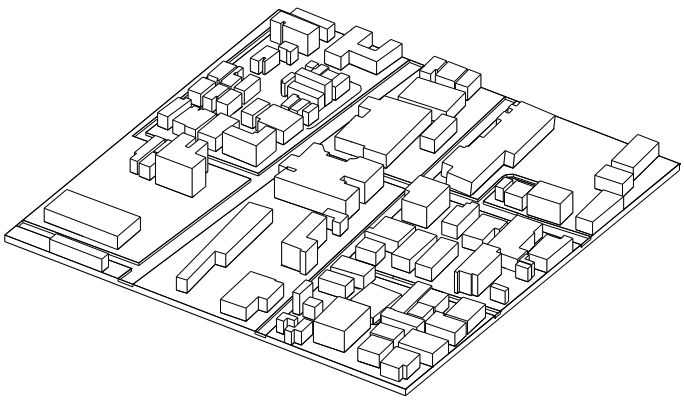
Jurong West

Population
52,100
Total Open Space
741,842 m^2 – 74%
Footprint of Building
258,158 m^2 – 26%
Total Floor Area
3,815,780 m^2 – 380%



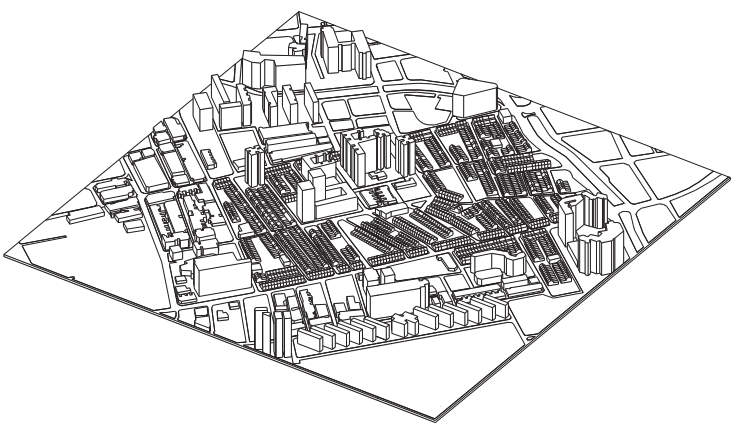
Tuas Industrial Estate

Population
3,840
Total Open Space
6,798,550 m² – 70%
Footprint of Building
300,145 m² – 30%
Total Floor Area
450,000 m² – 45%



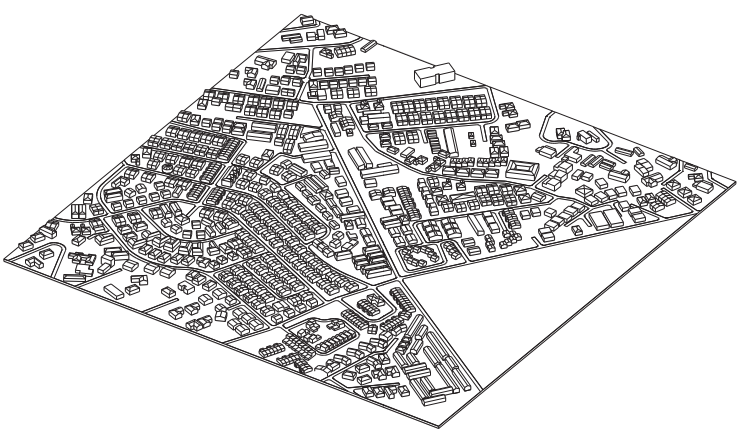
Little India

Population
11,595
Total Open Space
857,573 m² – 86%
Footprint of Building
142,427 m² – 14%
Total Floor Area
647,438 m² – 65%



Bukit Timah Road

Population
4,620
Total Open Space
774,264 m² – 77%
Footprint of Building
225,736 m² – 23%
Total Floor Area
564,340 m² – 56%



10 *Principles for Liveable High-Density Cities*

LESSONS FROM SINGAPORE

Singapore is among the few high-density cities that has performed well in global liveability rankings. Are there lessons others can learn from it? The **Centre for Liveable Cities** and the **Urban Land Institute** initiated a joint study to answer this question. As part of this research, a series of workshops were conducted to engage experts from the public and private sectors, as well as academic and professional institutions in Singapore. This essay summarises the findings published in the book *10 Principles for Liveable High-Density Cities: Lessons from Singapore*[1].

A general sentiment exists that high density spells the end for the liveability of a city. Density is often blamed for accentuating problems like overcrowding, crime, disease, pollution, poverty and high living costs. In its 2012 Global Liveability Survey, the Economist Intelligence Unit observed that the top-ranked cities tended to have a relatively low density.

Although considered a high-density city with over 7,000 persons per square kilometre, Singapore has clinched top positions in liveability rankings. It is an outlier that combines high density with high liveability. This suggests the intriguing possibility that high density need not compromise people's quality of life. Based on the findings from a series of expert workshops, this essay distils 10 principles from Singapore's experience. We argue that, with thoughtful planning and effective governance, a city can mitigate the negative externalities of high-density living, while exploiting special opportunities to improve liveability, competitiveness and sustainability.

[1] *Download the e-version of this book at www.clc.gov.sg/documents/books/10PrinciplesforLiveableHighDensityCitiesLessonsfromSingapore.pdf*

01

01 The different 'urban layers' of redevelopment in the Tanjong Pagar district – conserved shophouses, public housing and offices.

1

Plan for Long-term Growth and Renewal

Continuous efforts to optimise land use can help dense cities overcome the constraints posed by past developments. Through land value creation, regulations, rights of use and limited lease tenures, Singapore's land policies encourage the best use of land, proper maintenance and optimal development cycles. City planners review Singapore's Master Plan every decade, and they may boost land value and density in existing properties by raising plot ratios, subject to a charge levied on developers. Another strategy is the designation of 'white sites'. Developers may propose their preferred land-use, provided a minimum quantum mix is achieved, so as to meet market demands, encourage a range of investment strategies and boost urban growth.

Through systematic upgrading programmes, older public housing flats are enlarged and improved, while new lifts, covered walkways and better landscaping improve the public areas. This maintains good living standards for all, despite the age of homes and neighbourhoods. To optimise land use, the Selective En Bloc Redevelopment Scheme lets the government demolish some older apartment blocks, so as to rebuild them to a higher density. By encouraging affected residents to relocate to nearby flats, this scheme facilitates renewal and growth without dispersing established communities.

01

01 The Southern Ridges is a 10-kilometre trail composed of treetop walkways, pedestrian bridges and town parks passing through residential areas.

02 Clementi Mall is an example where a mass transit station, bus interchange, retail outlets and public residential housing are seamlessly integrated.

2

Embrace Diversity, Foster Inclusiveness

People from diverse regions often live next to each other in dense cities, which can be a source of tension sometimes. But when embraced, demographic diversity can culturally enrich a city, and boost its competitiveness. Singapore's urban conservation districts of Chinatown, Little India and Kampong Glam let people easily enjoy varied environments and lifestyles. Comfort with cultural differences, capabilities in diverse languages and connections to diasporic networks, also bolster Singapore's global competiveness.

Amidst diversity, inclusiveness is needed to maintain social harmony. Among Singapore's most powerful tools in this regard is its public housing. In particular, the Ethnic Integration Policy defines quotas that guide housing allocation, so that different groups share the same neighbourhoods. Planners also integrate public and private housing for different income groups in suburban towns. This nurtures familiarity, cohesion and trust across diverse groups.

Density supports interaction through shared activities. Proximity, convenience and the need to share scarce land, encourage people to engage in hobbies, like community gardening or soccer, with other enthusiasts nearby. Local interest groups related to sports and the arts are commonplace in Singapore.

Well-designed local spaces can foster a sense of inclusiveness and community by omitting walls and other barriers to movement and interaction. In Singapore's public housing estates, people traverse multiple thresholds and differentiated spaces, from ground level public 'void decks', through semi-public corridors linking high-rise apartments, and then to the privacy of the home, without sacrificing security or privacy.

3

Draw Nature Closer to People

Greenery softens a densely built-up city, and makes it more liveable. Satellite photographs show that, despite sustained urbanisation from 1986 to 2007, Singapore's green cover grew from 36% to 47%. Tree-lined roads, parks and nature areas are the foundations of Singapore's Garden City reputation. Incentives also encourage building owners to invest in greenery, producing vertical green walls, sky gardens, and lushly landscaped atriums and plazas.

Under the Active Beautiful Clean Waters programme, Singapore is transforming its functional concrete drains and canals, and restricted-access reservoirs, into naturalised and bio-diverse streams, rivers and lakes that are open to public recreation. These new landscapes, like the Alexandra Canal wetlands, have drawn people closer to water, and improved their quality of life and environment.

4

Develop Affordable Mixed-use Neighbourhoods

Easy access to good facilities is essential to high liveability, and one of the advantages of high urban density is that it supports the provision of varied commercial, civic and transport amenities in convenient proximity to homes. Singapore's suburban public housing towns are seen as good quality residential environments, with amenities planned within easy reach of most homes. Networks of walkways and bicycle lanes improve mobility and the accessibility of homes and amenities within towns, while promoting sustainable and affordable transport.

Housing policies, land use planning and financial incentives are crafted to deliver a variety of housing and amenities for people from different income groups. The density and population of these towns generates economies of scale, which helps moderate living costs. Facilities that require larger catchment populations, such as cineplexes and shopping malls, are clustered in town centres, while more localised amenities, like convenience stores, coffeeshops, playgrounds and kindergartens, are closer to homes, in the smaller neighbourhoods and precincts that make up each town.

02

5

Make Public Spaces Work Harder

Land is scarce in dense cities, and this calls for innovative solutions to make spaces work harder and produce synergies. For example, Singapore transformed slivers of underused land, along roads and canals or under elevated railway tracks, into 'Park Connectors'. These are landscaped jogging and cycling tracks that link parks and let people exercise, play, socialise, commute and enjoy nature closer to home. The island-wide Park Connector Network is a comprehensive matrix of green spaces that promotes a healthy lifestyle, social interaction, sustainable transport and even biodiversity.

In dense cities, public spaces need not be limited to the ground level. In Singapore, many underground public passages are linked to transport nodes like train stations and bus interchanges. Beyond funnelling people, these 'nodes and channels' are activated public spaces lined with shops and cafes. Skyscrapers like Marina Bay Sands or Pinnacle@Duxton have roof top gardens that enrich residents' recreational experiences and shape the city's identity.

6

Prioritise Green Transport and Building Options

Dense cities are better able to support public transport. Singapore invested in an extensive, integrated and affordable public transport network. Comprising buses, light rail and a mass rapid transit system, it offers good connectivity to most of the island. High-density transit-oriented development has resulted in the proximity of many homes to public transport and the viability of these systems. Meanwhile, policies such as congestion and fuel pricing and a cap-and-trade system to limit car ownership, help discourage the use of private vehicles. This reduces congestion, as well as noise and air pollution. Covered walkways, Park Connectors and intra-town cycling networks also make walking and cycling viable low-energy transport options.

To mitigate the urban heat island effect common to dense cities, Singapore tries to reduce the energy consumed by buildings, by promoting green buildings through its Green Mark Incentive Scheme. The city also invested in a District Cooling System at Marina Bay, where centrally chilled water is piped to multiple buildings for air-conditioning. This system is suited to high-density districts, and it generates energy, water and cost savings, besides freeing rooftop space for other uses. All new developments in Marina Bay now need to meet higher Platinum or Gold Green Mark standards, and must provide sky-rise greenery and communal landscaped areas equivalent to their site areas.

01 Bishan-Ang Mo Kio Park.

7

Relieve Density with Variety and Add Green Boundaries

One remedy to the effect of a concrete jungle in dense cities is the 'checkerboard' urban planning principle, which mixes high- and low-rise developments to create variety and physical relief. Singapore has created varied residential environments by interspersing high- and low-rise developments. Even though the city's overall density is high, the spatial quality of specific places is therefore not unpleasant or overwhelming. Such distinctions and attention to design at the local scale also helps create place identities. For instance, Bishan-Ang Mo Kio Park, which separates Bishan and Ang Mo Kio towns, supplies a recreational amenity to residents in both towns and provides a breather from their high-rise environments. As a strong green boundary, it also allows both towns to retain distinct identities, despite their close proximity.

01

01

01 Residential blocks surround shared playgrounds, event areas and sports facilities, enabling residents to see what is going on from their apartments.

02 Orchard Road is lined with trees, street furniture and thematic decorations.

8

Activate Spaces for Greater Safety

Dense cities are sometimes seen as less safe. This can be mitigated using the idea, taken from urban design and space management, of 'activating' spaces to make them safer. This involves encouraging some people to linger and participate in activities in a space, and not just move through it. Spaces in Singapore's suburban towns are designed as a system of channels and nodes, with thoroughfares punctuated by activities at the nodes, like playgrounds or seniors' corners. Having activities at different times, and the presence of the community on the ground level, keeps these spaces safe.

9

Promote Innovative and Nonconventional Solutions

Dense, resource-scarce cities need to foster innovations so as to overcome constraints and improve their liveability and competitiveness. Singapore has turned its shortcomings to its advantage through a culture of systematic innovation. Indeed, the 2011 Innovation Cities Index ranked it among the world's 30 most innovative cities. In one-north, people can work, live, learn or play in a 200-hectare development designed to nurture research and innovation. With reduced commuting needs, researchers can focus on work, yet easily recharge or exchange ideas at nearby gyms, cafes and parks.

Singapore has also relied on innovations to overcome its water scarcity and develop a sustainable water supply. Water reclamation was made possible by methodically rationalising the city's drainage and sewerage systems and then being alert to and adopting relevant technologies when these became viable. NEWater, the product of this reclamation, is now pure enough to be used for wafer fabrication factories and drinking.

02

10 3P

Forge 3P Partnerships

New developments often force dense cities to make tough land use trade-offs. The interests of residents, businesses and other groups are at stake in the development and management of places. Consulting and collaborating across groups can improve development strategies and even produce win-win solutions that enjoy smoother implementation. Singapore River One began as a project to get stakeholders to champion place management at the Singapore River. It is now becoming instrumental in the successful development of leisure and commercial spaces there.

The Orchard Road mall enhancement initiative is driven by an inter-agency taskforce led by the Singapore Tourism Board, along with the Urban Redevelopment Authority, Land Transport Authority and National Parks Board. These agencies worked with private design consultants and consulted Orchard Road stakeholders to implement improvements, like new street furniture. Planning incentives encouraged landlords to improve their façades, which also contributed to a more vibrant street.

The UN projects the world's urban population will grow to five billion by 2030, and it seems inevitable that most cities will grow larger and denser. These 10 principles can be a starting point for planners, developers and citizens to think about how cities can support more people without sacrificing quality of life. Creating a highly dense yet liveable city is not easy, but we hope our report shows it is possible – and that it has been done successfully before.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Scott Dunn is the Vice President at AECOM in Southeast Asia, and the Urban Land Institute Singapore Council Chair. Focused on promoting collaborative work across regions, he directs multidisciplinary teams on the design of mixed-use and high-density developments across Asia. Scott is highly regarded as a thought leader in the planning community. An advocate of sustainable land development, his papers on the subject have been widely published and he actively lectures on land development at conferences and events throughout Asia.

The Generative City

Great cities will be increasingly distinguished by their capacity to produce inclusive, sustainable and innovative outcomes. **Ayesha** and **Parag Khanna** argue that these cities will be driven by empowered citizens, ubiquitous technologies and policies that enable the actors of the generative city to collaborate on boundary-breaking projects that redefine the way we work, live and play.

In recent years, 'smart cities' have risen up the agenda as demonstration projects for sustainability and showcases for innovation in new industry clusters. At the same time, there is a growing realisation that most cities coping with rapid urbanisation, ageing infrastructure, and scarce finance struggle with the enormous challenge of retrofitting and modernising in an affordable manner. For both old and new cities, technology is only part of the solution; policy matters just as much.

As the price of technology falls, sensors become increasingly ubiquitous, and data analytics widespread, what will increasingly differentiate cities is not how 'smart' they are in terms of technology penetration, but the extent to which they leverage technology to bring about innovation, sustainability and inclusiveness. Why do these normative elements matter in evaluating the management of urbanisation? Historically, great cities of the world have been determined by geographic location, demographic diversity, infrastructure quality, industrial innovation, vibrant culture, and global connectivity. Yet in the age of mega-cities featuring not only large populations but also great stratification of incomes and disparities of access to essential services, the extent to which all of a city's population shares in technological progress and its material benefits becomes an important qualifier as cities benchmark against and learn from each other. Indeed, the rapid acceleration of urbanisation in recent decades correlates directly to the rise in income inequality within nations, even as it diminishes between them.

The essential approach to harnessing technology to serve the goals of innovation, sustainability, and inclusiveness is called *generativity*. Generativity is a broader property of systems that denotes the capacity of agents within them to connect to others and produce unanticipated outcomes and change. While the term's origins lie in psychoanalysis and linguistics, the Internet is now commonly understood to be a nearly universal and generative

Generativity is a broader property of systems that denotes the capacity of agents within them to connect to others and produce unanticipated outcomes and change.

01 People cycling in Copenhagen during rush hour.

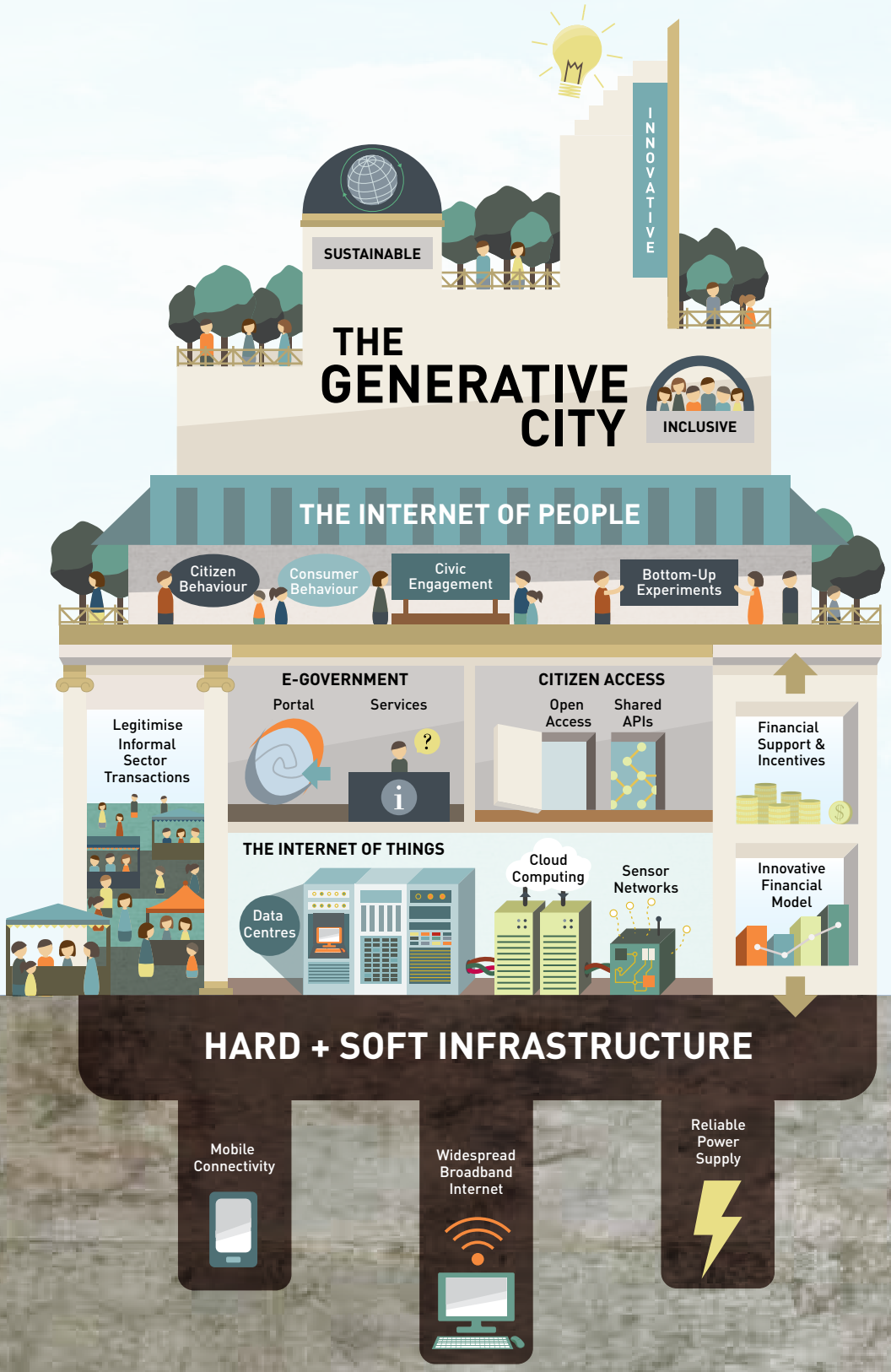
01

system. Jonathan Zittrain of Harvard Law School writes that the Internet is generative because of its "capacity to produce unanticipated change through unfiltered contributions from broad and varied audiences." Indeed, the Internet is open to all participants, technically accessible to users producing code and content, and amenable to extension in un-predetermined ways. Such generative characteristics have enabled the Internet to become a kaleidoscope of applications created by a global community of users.

Today we can witness how technology is advancing the generativity of a wide range of social systems. In our governance, economy, healthcare, and educational domains, new producers and users of services are emerging, as citizens are empowered to leverage modular designs, lower cost production, and peer-to-peer exchange to disrupt traditional hierarchies and patterns. From flip-teaching[1] in the classroom to virtual currencies[2] in the marketplace to citizen activist networks, human social organisation is increasingly generative in nature. As some have already observed, it is beginning to resemble the Internet itself.

Nowhere is this truer than in cities that are experimenting with new technologies to cope with the pressures of urbanisation.

[1] *Students view teacher-created videos online before class; teachers spend more class time interacting with students.*
[2] *Used to purchase virtual goods in online communities e.g. social networks, virtual worlds and online gaming sites.*


SUSTAINABLE
INNOVATIVE
THE GENERATIVE CITY
INCLUSIVE
THE INTERNET OF PEOPLE
Citizen Behaviour
Consumer Behaviour
Civic Engagement
Bottom-Up Experiments
E-GOVERNMENT
Portal
Services
CITIZEN ACCESS
Open Access
Shared APIs
Legitimise Informal Sector Transactions
Financial Support & Incentives
THE INTERNET OF THINGS
Data Centres
Cloud Computing
Sensor Networks
Innovative Financial Model
HARD + SOFT INFRASTRUCTURE
Mobile Connectivity
Widespread Broadband Internet
Reliable Power Supply

Increasingly we see these experiments led from both top-down and bottom-up. As MIT's Carlo Ratti puts it, "Technology today allows us to plan things in a much more collaborative, bottom-up way. People sync-up, do things and take action together." This is the essence of generativity, as it reflects the reality of increasingly complex inter-relationships among priority policy areas such as economic growth and job creation, transportation and sustainability, and technology access and social justice.

Both qualitative and quantitative metrics are required to appreciate the range of practices associated with urban generativity, and to assess whether they contribute to the goals of innovation, sustainability and inclusiveness. Here we will highlight some of the necessary foundations and leading best practices that have shown to be most promising.

The technology platform is itself a key underpinning of generativity, and needs to be designed in such a way as to enable government efficiency and public access to useful data. This can include cloud computing services, sensor networks and data centers, and traffic management systems for both road congestion management as well as public transportation systems such as subways and light rail. Policies built on top of these platforms include e-government portals such as data.gov and other e-government services that allow citizens access to data to shared Application Programming Interfaces (APIs) in order to create added-value programs. For example, Code for America, a private initiative backed by major companies and foundations, trains dozens of fellows who embed in government agencies and small companies to optimise their usage of information technology. Because U.S. state and municipal funding for IT has reached US$60 billion, which is half as much as U.S. federal spending, Code for America now has a special initiative for cities, expanding from three city partners in 2011 to 11 in 2012, in each case expanding the range of data services and digitising government request forms.

Importantly, such combinations of technology, policy and civic

...human social organisation is increasingly generative in nature. As some have already observed, it is beginning to resemble the Internet itself.

Here generativity implies approaches that legitimise the transactions of the informal sector and provide financial support and incentives for the provision of safe water and sanitation and adequate housing.

01 The cable car system at the Complexo do Alemão in Rio de Janeiro.

02 Volunteers planting trees in the 'Trees Across Toronto' programme.

engagement bring us beyond the 'Internet of Things' to the 'Internet of People'. Only through such generative civic engagement with technology can successful programs such as 'See-Click-Fix' emerge across multiple American cities in which citizens respond to each other's inputs and problems as much as the government does. One sees such innovation in developing countries as well. One leading example is the Bangalore-based Map Unity, a civic initiative to geo-locate not only transportation services, but also information about heritage sites, educational institutions, agricultural sites and prices, and health clinics.

Successfully creating such an integrated information system fundamentally requires the presence of both hard and soft infrastructure elements, ranging from reliable power supply to widespread broadband Internet and mobile connectivity. As cities in developing country expand their basic infrastructure, their investment models should focus on sustainable technologies such as LED street lighting and low-emission building construction for commercial and residential real estate, while also ensuring adequate allocation for affordable public housing. Though the obstacles to major infrastructure finance include its long time horizon and high start-up costs, innovative financing models are emerging at the intersection of public and private actors such

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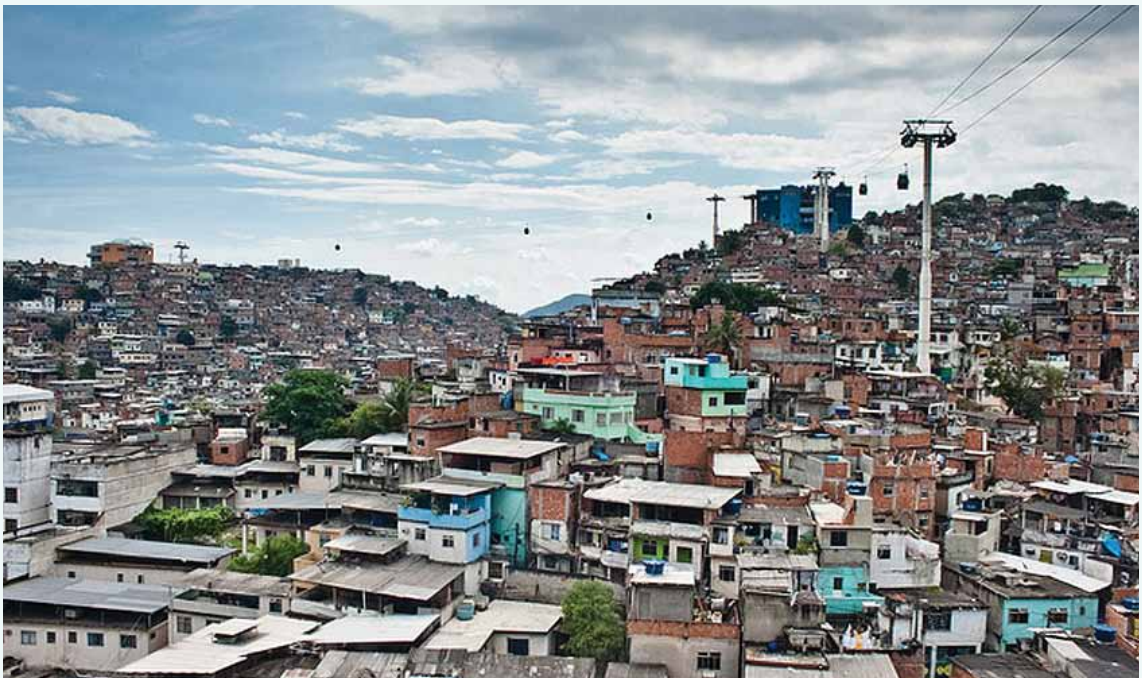


02

as infrastructure banks[3], covered bonds[4], credit risk guarantees[5], and corporate financing arms.

Sustainable infrastructure is not only about technology but citizen and consumer behaviour. Even as Stockholm and Copenhagen strive towards zero-emission buildings and port facilities, they have also expanded public cycle access through schemes such as Copenhagen's 'bicycle superhighway'. As demand for private vehicles grows in emerging markets, cities such as Singapore are offering a rebate of up to 40% on the purchase of low-emission vehicles, and expanding plans to deploy a fleet of shared-use electric vehicles. The 'Trees Across Toronto' program has planted 300,000 trees across the city, while New York City authorities and citizens are halfway towards their goal of one million trees by 2017. New York also not only has mandatory energy audits for government, commercial and residential buildings, but is creating 'solar maps' that allow residents to measure the solar power potential of buildings in which they live and work, presenting opportunities for cost savings and entrepreneurial innovation. Similar initiatives are underway to promote vertical farming projects that can boost the resilience of food supply, and the use of biomass for waste-to-energy power sources. Especially given growing demand for fresh water supply, Singapore's distribution of do-it-yourself kits to reduce water leakage – earning it the lowest rate of home water leakage in Asia – needs to be replicated across the Middle East and South Asia as well.

Infrastructure innovation and job creation will be most necessary in precisely these highly populous regions where urbanisation rates are highest, property rights weakest, and social protections most fragile. Already one in five people in the world live in urban slums, a number that will only diminish if policies are designed with inclusivity as a priority. Here generativity implies approaches that legitimise the transactions of the informal sector and provide financial support and incentives for the provision of safe water and sanitation and adequate housing. In Mumbai, new housing is being developed to help shift residents of the city's largest slum, Dharavi, into permanent

[3] *A bank that focuses on financing infrastructure projects.*
[4] *A bond that is backed by a pool of assets/collateral such as residential mortgage loans.*
[5] *To stimulate the economy, this protects lenders from defaults by high risk borrowers.*

settlements. In Rio de Janeiro, new cable cars are in place to connect favelas to central districts, increasing both mobility and economic opportunity.

Many other facets of urban life will take on attributes of generativity in the years ahead. For example, an estimated three times as many workers will telecommute one decade from now as service sector employment grows and broadband Internet access spreads. Also, private vocational institutes in emerging markets are training thousands of potential entrepreneurs in critical fields ranging from programming to construction management. Such trends suggest the possibility of a virtuous circle of less congestion, greater employment, and more innovation.

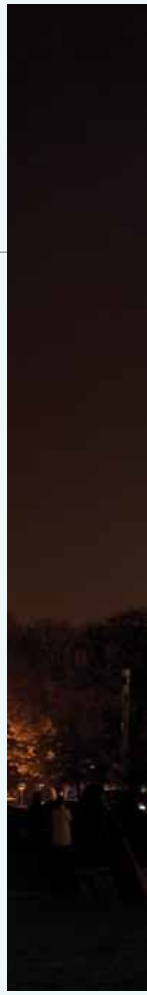
While this scenario is one of many involving the intersection of urbanisation and technology, it reminds of the need to act with foresight in infrastructure planning. Here we have attempted to raise questions that must always be answered along this process: How transparent and co-governed are new technologies deployed in urban environments? To what extent are innovation, sustainability and inclusiveness strategically incorporated into new infrastructure investments? Ultimately, balancing the desire for control with the need for healthy chaos and experimentation are the essence of empowering a progressively generative city environment.

Ultimately, balancing the desire for control with the need for healthy chaos and experimentation are the essence of empowering a progressively generative city environment.

We must remember that generativity is a value-neutral property. Systems that are open to all can become vehicles for egalitarian policies but also monopolistic actors. From the prevalence of upgraded security cameras with facial recognition technologies in major cities such as London and Beijing, to the fierce competition among 'Silicon Superpowers' such as Apple, Google, Microsoft, and Facebook to dominate hardware, software, search engines, and consumer data, it is far from certain whether cities in the future will more resemble the 'City of Control' or 'City of Trust' from David Brin's noted 1998 novel *The Transparent Society*. It is therefore most incumbent on the residents of generative cities themselves to harness their increasingly technological environment to shape urban life in directions that are innovative, sustainable, and inclusive.


Ayesha and **Parag Khanna** are co-directors of the Hybrid Reality Institute, a research and advisory group focused on emerging technologies and their economic, social and political implications. Ayesha is also CEO of Urban Intel, a digital education technology company. Parag is also a senior fellow of the Singapore Institute of International Affairs. They are co-authors of *Hybrid Reality: Thriving in the Emerging Human-Technology Civilization* (TED Books, 2012).

Intense Cities



The concentration of people in cities produces a more intense urban life, with greater connectivity, productivity and buzz. Prof **Marilyn Jordan Taylor** explored this notion of intense cities at the World Cities Summit in July 2012, held in Singapore. She argued that "a whole city cannot be intense, intensity can only exist in relationship to its opposite, and there are characteristics that we know when we experience them that tell us that we are in a place of intensity, and a place that we will enjoy." This photo-essay explores six characteristics of intense cities that Prof Taylor highlighted, accompanied by excerpts from the transcript of her talk.

Berlin Cathedral.

Havana.

Age & Patina

Age – the layers of time, the experience, the contrast and the place itself – characterises Berlin, a wonderful example of a city of intense places. It's an old city with a very young population, demonstrating that contrasts can bring out a sense of intensity.

Another example of being in a place of age and one that has acquired a distinctive patina is Havana, where we see the framework of the old city, the cars of mid-century and the excitement of a new young population coming into existence.

Park Güell, Barcelona.

Arts & Culture

Most of the places that we think of as intense express a culture and sometimes its arts. There are values being expressed there – some more about fun, others more serious, and some about art as a doorway to understanding the culture we're in. In wonderful cities like Barcelona, we actually have the art of building that tells you someone invested greatly in a place and is using architecture and the city to express qualities of life. We also have an art culture, the constant presence of entertainment whether it's in a subway car or in all aspects of our lives. The combination of arts and culture, at high to low manifestations, is a part of an intense city.

Sense-ability

Using your senses is also important – you cannot just watch an intense place. We have the wonderful Crown Fountain in Chicago's Millenium Park, where there is the sound of water, the spray in the air, the giggle of voices, the rush of activity when the water spouts out of the mouth in the art work. It seems to me that needing to bring your senses to bear, not just your rational view of life, is one of the ways that you know you're in an intense place, in an intense city.

Crown Fountain in Millenium Park, Chicago.

Individual Initiative & Shared Responsibility

Beyond these things, an intense city is somehow the combination of individual initiative – building a business, getting a job, doing your job well, working at a level of commitment – and then sharing that in a greater sense of responsibility. That is important to the intense places in our lives. We have the new phenomenon of everyone in a shell of his own iPhone, iPad, or smartphone, waiting for the train but already at work in the morning because we know that we need jobs to drive our lives. At the same time, there is the experience of going together.

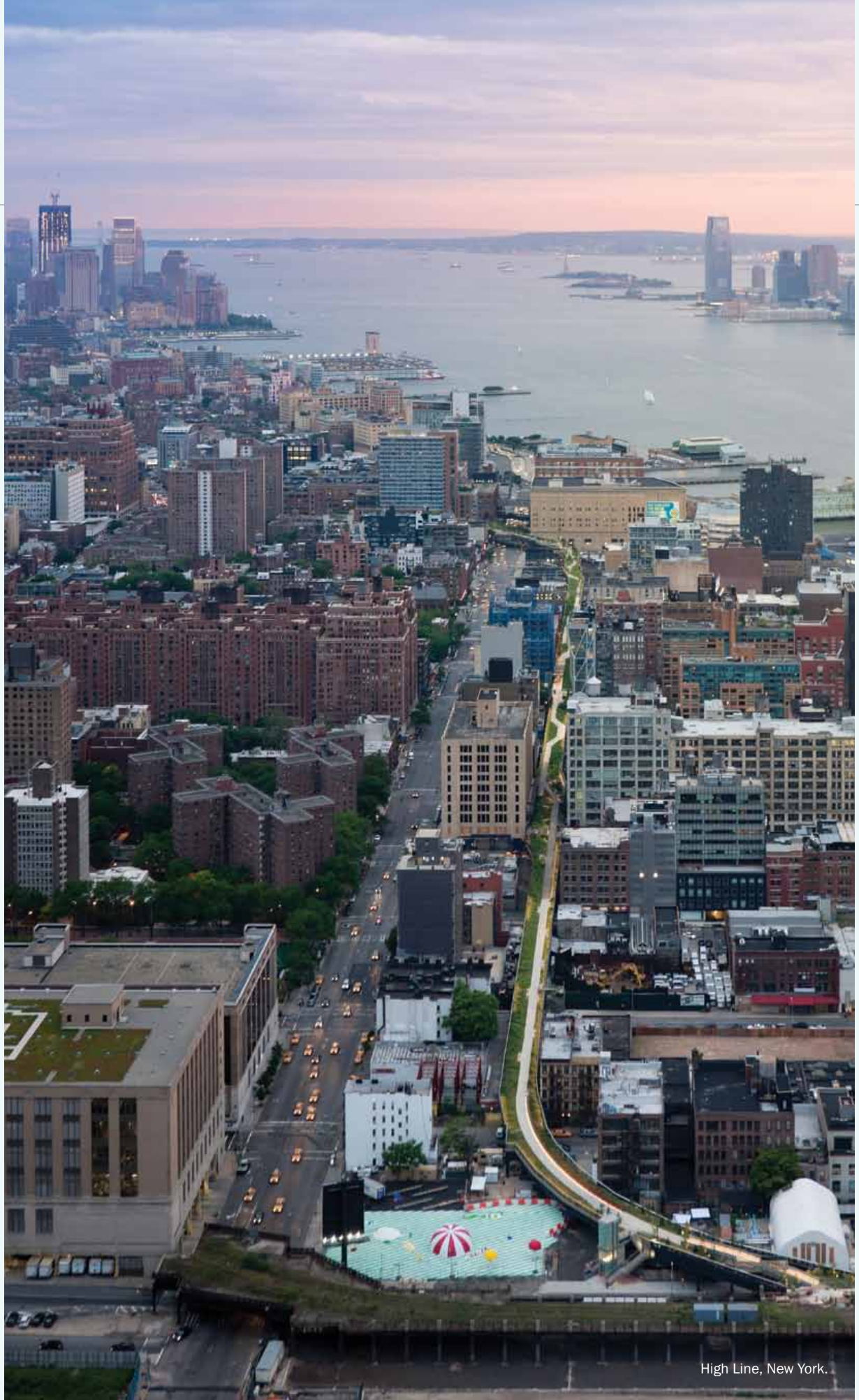
There is a seriousness of intense cities that brings out a commitment to each other that we are going to make life better. I had the chance to experience that in Khayelitsha, just outside of Cape Town… In a place lacking the public realm, people came out of the homes they are living in, in an informal settlement, and together built, properly used and made safe the community centres that pull their community together. This is indeed a place of intensity and a very special one indeed.

Khayelitsha, Cape Town.

Shibuya, Tokyo.

Temporality

Intense places have their temporality. Just as they have to have the opposite – non-intensity – to exist, their intensity changes across time, across a day, across a season, across the calendar, across the years. An example of this is, of course, the night. How fantastic it is, how you feel you're in a place of importance and intensity when the night arrives and the lights come up and the darkness is the balance to all those lights, or when you are out in the clubs. There are so many places in our cities where the clubs themselves are an indicator of intensity. We are assaulted with the brands and the trends of our lives… Here in Tokyo, there is an intensity about this, getting out there and reacting to everything, amidst the excessive consumerism that the world is offering us now.



High Line, New York.

23rd Street Lawn, High Line, New York.

Buzz

All of this adds together to create a sense of buzz. When you're in an intense place, you know you're there. You can feel it… when you feel the intensity, you know you're in an intense place. The High Line [in New York City] fell into disrepair over the years and has come back to life in a project we have all heard about, a one and a half mile walk, 22 feet in the air, usually only about 22 feet wide, in which people can be mobile, in which they can sit and watch each other, the people they are with, or the city all around them. It becomes a weaving line that ties things together. It is not a dense place, yet it is a place that has brought magic to this part of the city.

This is a great example of an intense place in a generally intense city and something that really is hallmark of why we enjoy coming together and being, as we often are in cities, the place where we reveal our best selves.

Prof **Marilyn Jordan Taylor** is Dean of the School of Design, University of Pennsylvania. A former Partner at Skidmore Owings & Merrill LLP and its first woman Chairman, she was involved in major urban projects, airports and transport systems, and civic initiatives around the world. She was also the first architect and first woman to become chairman of the non-profit Urban Land Institute, where she championed a focus on cities, sustainable communities, and infrastructure investment.

Hong Kong

THE RESPONSE TO POPULATION GROWTH

01 Hong Kong, one of the world's highest density cities.

Hong Kong is one of the most densely populated cities on earth, placing it at the frontline of efforts to make high urban density more liveable. Prof **Anthony G.O. Yeh**, an expert on Hong Kong's achievements and challenges in this area, shared the experiences of his city at the World Cities Summit in July 2012, held in Singapore. This essay is adapted from his presentation.

By the definition of a city, its activity should be intense – otherwise, the city would have great problems. Being a high-density city, Hong Kong is a very intense city.

Hong Kong has 1,100 square kilometres but we only occupy 30% of the area. It is mainly because of the terrain and historic reasons. As we did not have enough land, we did a lot of land reclamations in the past, and these are concentrated near the main urban area. Because of this, the density of Hong Kong is very high – around 6,400 persons per square kilometres for the whole territory, but it can be as high 300,000 to 400,000 persons per square kilometres in some very dense parts in the main urban area, which has no comparison in other cities.

Hong Kong's population is growing at an additional one million people every 10 years. Future projection shows a population of over 8.5 million by 2030. How are we planning for this?

01

01 An aerial view of the old town of Fez, Morocco.

Strategic Planning and Land Supply

We do a lot of strategic planning for future population growth. *Hong Kong 2030* is a strategic plan for the next 20 years to meet the housing and economic land requirements as well as infrastructure development. It still continues to use high density compact transit-oriented development (TOD) to minimise the use of the precious and limited urban land. In addition to the *Hong Kong 2030*, we have to search our soul to find more land supply. We have carried out public consultation on how to create more land supply through land reclamation, redevelopment, land resumption, rezoning land, rock cavern development, and the use of ex-quarry sites.

Even if we can do all this, we still need to have high-density development strategy because of land scarcity. There are a lot of advantages to high density development. For example, it will save land, shorten travel distances and support mass transit systems, as seen in the work of Peter Newman and Jeffrey Kenworthy's *Cities and Automobile Dependence*, published in 1989. However there are also a lot of disadvantages associated with high-density development, particularly social pathology and crowding.

Addressing Perceptions of Crowding

When we talk about high density, one of the major problems is crowding and this is something we want to avoid. In a lot of studies in the 1960s about high density, there was already a conclusion that there is no direct relationship between social pathology and high density. Crowding and the associated 'crowdiness' is a psychological feeling that is influenced by many factors. For example, Chinese culture can tolerate high density. Crowdiness and the environment is a very complicated issue. It varies from the scale of rooms, flats, buildings, street blocks, neighbourhoods, and to districts in a city.

The feeling of crowdiness can be ameliorated through good design and layout of buildings, making people move more quickly, and a clean and well-managed living and working environment. This is also related to cultural and socio-economic background, and the habits of the people. Hong Kong has been quite successful in the last 30 years in managing its crowdiness.

Comparing the images of Morocco and Hong Kong, the population density in Hong Kong is much higher than Morocco. But, when people travel to Hong Kong, they feel that Morocco is denser than Hong Kong. What are some of the measures taken in Hong Kong to reduce crowdiness?

Crowding and the associated 'crowdiness' is a psychological feeling that is influenced by many factors... The feeling of crowdiness can be ameliorated through good design and layout of buildings, making people move more quickly, and a clean and well-managed living and working environment.

01

Transport Policy

One of the most important things is that we do have a transport policy. Starting in 1979 we have had a long-term policy of trying to make use of public transport rather than private cars, and pursuing rail-based public transport development.

We also use TOD to maximise the use of transport-led development. We have increased the intensity of transit stations through the developments of shops, offices and residential flats to maximise this development. We also have a lot of transport management policies, including transport demand management, using road pricing and vehicle and gasoline tax to reduce the number of cars.

Another thing that we have done is to separate people from cars. In the central business district (CBD) in Hong Kong's Central District, we have an extensive pedestrian flyover system so that people do not have to have conflict with cars and can walk from one building to another using the pedestrian flyover without touching the ground.

Multiplied, Mixed and Managed Public Spaces

We can create space from limited space. This is something that Chinese landscape architecture is very good at and we are using this approach to have multiple uses of land. This includes having rooftop gardens on top of car parks and converting a road in the CBD in Central District to be a pedestrian street and public open space in the weekends.

In some buildings, like that of the Hongkong and Shanghai Bank Corporation (HSBC), we convert private space into public open space so that people can have a better shared space. Inside this landmark building you can see there is a nice privately owned public space (POPS).

Community facilities and spaces are provided in large-scale housing estates to minimise the need for residents to travel for these facilities. Each housing estate typically has over 20,000 people with self-contained and self-sustained community facilities and shops. In some places, it is like a city itself.

High-density living is also carried out through good housing management and education. The housing estates are well managed to create a clean and comfortable living environment despite their high density. Public education, such as publicising the dangers of falling objects from high-rise buildings on TV, can make people learn to behave better in the high-density environment.

01 An elevated pedestrian walkway, part of the Central-Mid-Levels escalator pedestrian system on Hong Kong Island.

02 Upper Ngau Tau Kok Estate is a typical large-scale housing development with community facilities and spaces. Courtesy of Wing1990hk@Wikipedia.

02

01

01 The public plaza of the HSBC building is well used as a gathering space on the weekends.

02 The 'wall effect'.

The Wall Effect

High density is not without its bad effects. In the last five years, we have been talking about the 'wall effect' in Hong Kong. This is an extreme case of high-density development. High-rise buildings built with little separation distance in between them will create a 'wall' with poor ventilation. This will create heat island effect, and also poor air quality and pollution. In 2009, we embarked on new building and urban design guidelines to foster a quality and sustainable built environment. We are concerned about high density, particularly building density. One of the proposals is to make buildings have greater setbacks from one another. Recently, we have also introduced air ventilation assessments in our planning system to further improve our high-density urban environment.

Planning, Education and Management

From the experience in Hong Kong, we find that a high-density living environment is more demanding than a low-density environment in planning and management. A small planning and management error will affect a lot of people. A good urban environment cannot totally rely on good planning – we cannot blame everything on the planners. We need good management and public education as well. Better planning, design and management can therefore reduce the negative impacts of high-density living.

... the 'wall effect' in Hong Kong... is an extreme case of high-density development. High-rise buildings built with little separation distance in between them will create a 'wall' with poor ventilation. This will create heat island effect, and also poor air quality and pollution.

02

Prof **Anthony G.O. Yeh** is Academician of the Chinese Academy of Sciences and Chair Professor and Head of Department of Urban Planning and Design, Director of Centre of Urban Studies and Urban Planning, Director of GIS Research Centre, and former Dean of Graduate School at the University of Hong Kong. He has published widely on urban planning and development in Hong Kong and China and the applications of GIS as planning support systems. He received the UN-HABITAT Lecture Award in 2008 for his outstanding contributions to research, thinking and practice in the human settlements field.

BOOK

Urbanization in SOUTHEAST ASIA

Urbanization in Southeast Asia: Issues and Impacts

EDITORS
Yap Kioe Sheng and Moe Thuzar

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Urbanization in Southeast Asia: Issues and Impacts presents the results of three regional workshops held between 2009 and 2010 initiated by the Centre for Liveable Cities and the ASEAN Studies Centre (part of the Institute of South East Asian Studies, ISEAS), both located in Singapore. The aims of the workshops were threefold. First, to explore opportunities for ASEAN countries to learn from each other by sharing information about best practices that are being developed to respond to the challenges of urbanisation at the national level. Secondly, to assess the preparedness of countries for their urban future and, finally, to recommend options on how regional cooperation could assist national and urban efforts to address urbanisation issues.

The book is organised into five main sections. First, there is an introduction that includes recommendations for promoting an increased regional focus on urbanisation, and a lengthy chapter by Yap on the challenges of promoting productive, inclusive and sustainable urbanisation in Southeast Asia, which provides a thorough analysis of contemporary trends. The second section focuses on cities as engines of development, looking at issues that impinge on the ability and capacity of ASEAN cities to develop competitive economic positions both within the region and globally. The development of urban infrastructure and trade facilitation are seen as important requirements. Inclusive cities makes up the next section, with focus on the challenges of urban poverty, housing and rural-urban relationships. The final three sections are devoted to the effects of environmental change and governance; decentralisation and urbanisation; and the need to promote an integrated approach to urbanisation in ASEAN countries.

From my perspective the most valuable contribution of the book is that it is a pioneer effort to kick start a "regional consciousness" among policy makers and academics of the challenges of urbanisation

in the region. In this respect, individual essays that present a regional perspective are particularly valuable. These include Yap on the overview of Southeast Asian urbanisation, Chuthatip Maneepong on rural-urban and intra-urban linkages, Victor Savage's thoughtful analysis, of climate change and urbanisation, that emphasises the effect of environmental change on the urban future, and Wicaksono Sarosa and F.P. Anggriani Ariffin reviewing approaches to engaging local governments and communities in sustainable urban development in Southeast Asia.

The book concludes with some suggestions for developing an integrated approach to urbanisation, including the establishment of an ASEAN Regional Forum on Urbanisation as a regional platform for discussion of urbanisation which is combined with some general policy recommendations on networking among researchers, municipalities, creating policy priorities on themes such as economic globalisation, decentralisation, privatisation and climate change (p8–9) which, despite the claim that they "are largely unchartered territory for cities and towns in Southeast Asia" (p9), have been the subject of much ongoing policy research. Certainly one might suggest that the question of developing socially inclusive urban places might deserve some attention.

This book is a good beginning "road map", but the pace of urbanisation in Southeast Asia and the challenges are so demanding that policy makers need to move with speed to develop responses to the challenges of the urban future of Southeast Asia.

Terry McGee is Professor Emeritus at the University of British Columbia in Vancouver, Canada. He has been carrying out research on urbanisation in Southeast Asia for more than 50 years, including *The Southeast Asian City* (1967) and *The Mega-Urban Regions of Southeast Asia* (1995) with I. Robinson.

KIGALI

View of downtown Kigali, capital of Rwanda.

Kigali is the capital of Rwanda, which experienced a tragic genocide in 1994 before its transformation into 'the Singapore of Africa'. Vet-turned-politician Dr **Aisa Kirabo-Kacyira** became Mayor of Kigali in 2006 and Governor of Eastern Province in early 2011. Under her leadership, Kigali was recognised for its cleanliness, greenness, safety, sustainable and affordable housing initiatives, and pro-poor job opportunities. In October 2011, she became Assistant Secretary General and Deputy Executive Director of UN-HABITAT. Here, she reflects on Kigali's experience as well as urban leadership in today's world.

Rwanda symbolises the incredible resilience of the human spirit. I often recall the words of President Paul Kagame who, on reflecting on the state of the nation and in part Kigali City in 1994, observed, "It was like completely a dead city, you could see devastation in the faces of the people… It is something I can share with others, that if we can do it, if we can come out of the situation we were in 17 years ago and be where we are today, nobody should despair."

A Focus on People

The lesson from Rwanda is: put people first, get the systems and structures right and the rest will follow. But this is not to say that it is easy! As a former Mayor, I can tell you that it can be a very lonely job! On the one hand we are the most visible and therefore accountable official on any project. Yet we often lack critical financial and human resources. This is equally true in both developing and developed countries, as we have seen from the recent spate of natural disasters showing us that even a mega-city like New York is vulnerable. Partnerships are key given the complexity and demands of urbanisation on cities and their leader today. Financial and human resource mobilisation is both an obvious priority and a never ending task.

Leaders need to create enough space in their busy schedules to strategically think not only *what* is to be done, but more importantly *how* it is to be realised. Keeping the focus on the real day-to-day needs of the urban poor is essential. Without this discipline, the benefits of urbanisation are lost and social inequalities deepen. It is often helpful to stop and ask: "Are our decisions adding dignity to people's lives?" Leaders are called upon to listen, learn and share – something that is easily said but difficult to practice given the demands and pressures they face. Last but certainly not least, as leaders we are called to be mentors whose values and character are consistent with what we say. We must invest not only in our communities but equally in our institutions and the people who make them work.

01 Vendors and customers at a thriving market.

02 An auto-stop hand washing unit in a school.

03 Orderly and well kept streets and buildings.

04 Pupils learning to use laptop computers.

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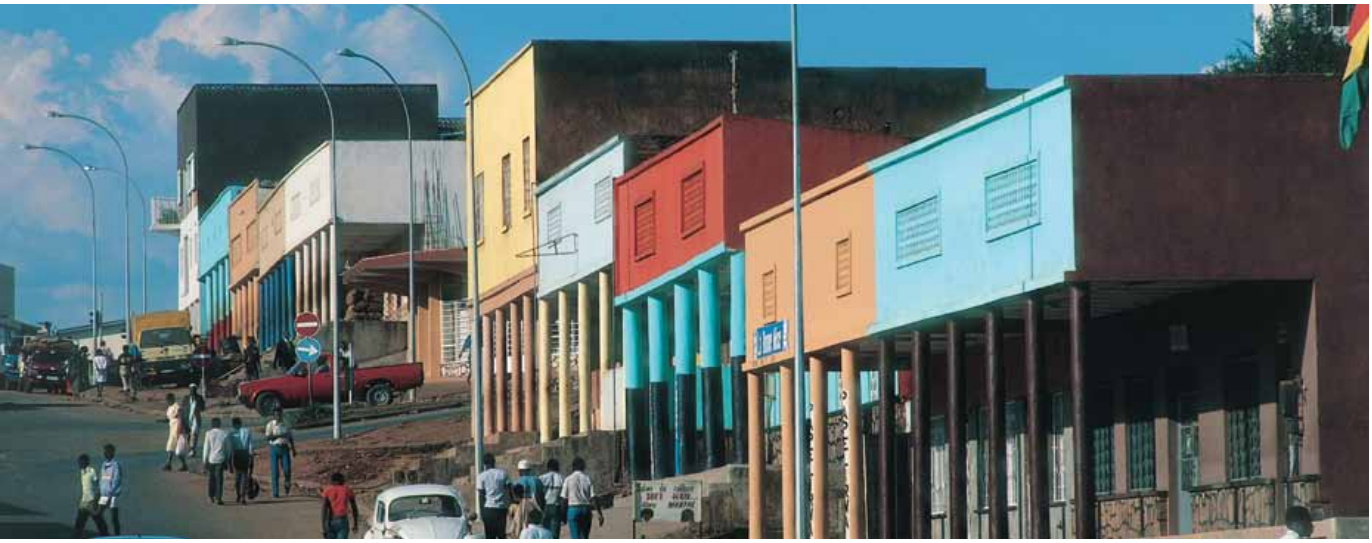

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04

Invest, Deliver, Unleash

For Rwanda as a landlocked country in the heart of Africa, investment in infrastructure has been key, but so too have been investments in learning, education, skills development and a willingness to embrace change while remaining true to our heritage.

Certainly the progress that has been made has required concerted efforts and hard choices. It required visionary leadership – leadership that inspires and builds trust and understanding by listening to its people and building consensus from the ground-up. But government must also work to deliver basic services to its people and put in place policies that unleash the potential of both communities and the private sector. As Mayor, I led a number of important initiatives not only to make Kigali a world-class city, but equally to transform the relationship between the city and its people.

Just as citizens have a right to expect quality services provided in a healthy and liveable environment, they must be prepared to play their part – because government can never do it alone. Initiatives like improving garbage collection, a ban on plastic bags, improving public transport, promoting security and safety, beautification of streets and pavements and slum and housing upgrading were only possible because communities supported these initiatives. Beyond the immediate benefits, these projects played a key role in helping communities become more cohesive and harmonious. I am pleased to say that the City was awarded the UN-Habitat Scroll of Honour in 2008 in recognition of these achievements, and I am often humbled and honoured by the interest shown in the Kigali experience.

Rural-Urban Integration

I was born in a village surrounded by family and many good neighbours. As a child, I was aware of how much our village depended on nearby towns and the city so that we could trade our farm products, attend good schools, access healthcare and purchase what was needed. Today, I am often surprised at how we create artificial boundaries between urban and rural, as if an improvement in one does not bring real benefits to the other. Yet, all of us aspire to an integrated life where family, work, school, food, social and economic facilities are all closely woven into our neighbourhood.

As former Mayor of Kigali City and Governor of Eastern Province, I saw for myself how the rapid development of the capital city has transformed rural lives thanks to development being planned at national, regional and local levels. But this was not by accident; it was a deliberate choice of working beyond the confines of traditional administrative boundaries and thinking. It often strikes me as peculiar that integrated thinking is so difficult to realise within typical bureaucratic structures. I have seen that in many countries this holistic approach is often overlooked.

As part of Rwanda's vision 2020, at least 30% of the population will be urbanised through a proactive, people-led integrated development plan that will support communities to access basic social and economic infrastructure ensuring that this growth is socio-economically and ecologically sustainable.

Partner, Commit, Succeed

Cities are incredibly complex. Success is only possible if there is a robust platform for partnerships between the city and other levels of governments and with communities, key stakeholders and the private sector. In early September, UN-HABITAT hosted the Sixth Session of the World Urban Forum in Naples, Italy. This event is so much more than simply a conference; it is a global microcosm of how cities should work. It brings mayors, ministers, planners and women's groups, academics and engineers, the private sector and youth all discussing, engaging and innovating together.

In 2016 the world will gather once again for Habitat III. This will present a unique opportunity for leaders to commit themselves to a new urban agenda which leverages the power of urbanisation to feed the development needs of our nations. It may seem like a mammoth challenge, but as I have seen for myself, with purposeful action and commitment, success is sure to follow.

01 An aerial view of Kigali.

We become smart by being around other smart people... Density helps the process of intellectual exchange by bringing people close to one another.

VIEWPOINT

The case for DENSE CITIES

by Edward Glaeser

Edward Glaeser argues that dense cities hold the key to more productive, innovative and sustainable communities. Prof Glaeser is the Fred and Eleanor Glimp Professor of Economics at Harvard University, and has published dozens of papers on cities, economic growth, and law and economics. His work has focused on why cities grow and cities as centres of idea transmission. His bestseller book *Triumph of the City: How our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier and Happier* captures his years of research on cities. Prof Glaeser is Director of the Taubman Center for State and Local Government, and Director of the Rappaport Institute of Greater Boston.

Cities exist because people value proximity to other people, to employers and to urban amenities. Density reduces distances and provides easier access to everything the city has to offer. Building up can alleviate traffic, reduce housing shortages and even help the environment, which is why cities need to embrace, not scorn, taller buildings.

A vast amount of research documents a robust connection between area level density and productivity. Within the United States, incomes typically go up by around 6% as density doubles, holding individual age and education constant. To address the worry that productivity causes density rather than the reverse, researchers like Stuart Rosenthal and Gilles Duranton have found that pre-existing environmental features that support build up, such as the presence of bed rock, also correlate to higher incomes.

My own work on density in Asia finds an even stronger link between density and productivity in China and India. Across urban areas within India, incomes increase by 12% when density doubles. In China, incomes increase by around 20% when density doubles. This is not the result of recent policies, for areas that were dense during the Ming period are dense today and are also more productive. Singapore is a striking example of the link between density and productivity, for it is both the second densest country in the world and according to some data sources, the country with the world's highest income levels.

While researchers typically agree that density increases incomes, there is less of a consensus about why density creates productivity. Some

credit the ease of buying and selling goods and services. Others focus on the flow of ideas between people who are physically connected to one another. This latter hypothesis explains why skills are so important to urban success, and why highly skilled, presumably information intensive, industries tend to locate disproportionately in urban cores.

The connection between density and idea transmission helps us to understand why globalisation and information technology seem to be making cities more, not less, important for the global economy. These forces have increased the returns to being smart and to innovation, which has been documented in hundreds of studies showing the rising returns to skill. We become smart by being around other smart people. Innovators typically borrow the ideas of others. Density helps the process of intellectual exchange by bringing people close to one another.

Density has advantages beyond productivity. Density makes it easier to go out to a restaurant or a concert or a museum. The large customer base that exists within a dense area makes it more attractive for entrepreneurs to start local

In China, incomes increase by around 20% when density doubles... Singapore is a striking example of the link between density and productivity...

businesses, which creates a virtuous circle where density engenders local amenities, and then those amenities attract more density.

One potential downside of urban success is that space can become extremely expensive, but density helps alleviate that risk as well. Building up means more usable space on any given plot of land. If we build taller towers, we have more apartments and office space to rent. Extra supply of space helps keep rents low. Attractive cities like London and Paris that have limited height through land use restrictions have often seen sky-high prices that ensure that the city is affordable only to the mega-rich.

Of course, skyscrapers will never be all that cheap, because high-rise dwelling are expensive to build. However, even when lower income individuals can't afford skyscrapers, providing more housing supply still helps the poor because wealthier people can live in a tall, new building, instead of crowding and gentrifying older, less dense neighbourhoods that can continue to house the poor.

There are other downsides of density. Waste and water management become more difficult in high-density areas. In some cases, street crime also increases in dense places. Local environmental issues, such as noise and polluted air, can also increase with density. But all of these urban problems can be mitigated with effective public management. Singapore has led the world in developing water solutions for dense places. Street crime can be handled with effective policing and appropriate regulations can limit noise and noxious gases.

Density is sometimes also associated with traffic congestion, but that link is ambiguous. Certainly, if many people drive on a limited set of roads, that will slow cars down. However, density also means that people are driving shorter distances, and that will alleviate traffic congestion. Once again, traffic congestion is best mediated by good policies, such as Singapore's Electronic Road Pricing, that effectively charge individuals for the social costs of driving, including congestion.

Indeed, the impact that density has on driving is one of the two main reasons why density is a great boon to the global environment. We use less energy and emit less carbon, when we take public transportation or even if our drives our shorter. Density also typically means that people live in smaller dwelling units, and that means less home energy use for heating and cooling. It requires less electricity to air condition a small urban apartment than a large suburban home.

Governments shouldn't force density on people or firms. Some people strongly prefer to live in areas with more land, and they should be free to make that choice as long as they pay for the full social costs of that decision. Some companies, especially manufacturing firms, should be located in areas where land is cheap, away from large population centres. While there are some older areas that deserve preservation, cities need to change and evolve if they are to prosper. They need new homes and workspaces to accommodate a new era. Density is the best way of allowing more people to come and enjoy the benefits of being in a city.

Some people strongly prefer to live in areas with more land, and they should be free to make that choice as long as they pay for the full social costs of that decision.

Joel Kotkin argues that what matters most in cities is people. He offers an alternate perspective to the increasingly prevalent view that urban density is desirable, by highlighting the inequality, low fertility and even unhappiness in dense cities. Described as America's 'uber-geographer' by the New York Times, Mr Kotkin is the author of critically acclaimed books, of which the latest is *THE NEXT HUNDRED MILLION: America in 2050*. He is a Distinguished Presidential Fellow in Urban Futures at Chapman University in California, and a Senior Visiting Fellow at the Civil Service College in Singapore. He is also a respected speaker and consultant, and the executive editor of www.newgeography.com.

In this urban age, rarely do we ask the question: what is a city for? Among the vast majority of urban pundits – Richard Florida, Ed Glaeser, Andrés Duany, etc. – the city is promoted primarily as an engine of productivity, a device to reduce the dreaded 'human footprint', a Lego set for architects, a source of windfall profits for connected developers or simply 'an entertainment machine' for the aspiring masses.

What we forget is the human aspect of the city. Even a well-run city like Singapore can work productively and yet engender among the highest levels of pessimism of any advanced country on earth. A city is not a clock, or a machine, but a place for biological organisms called humans, who need to reproduce to survive.

What we need to focus on, is building a *Human City*. This is different than simply being a 'World City' that battles incessantly for bragging rights. A city like Singapore is global by its very location, history and the composition of its population. Its primary means to maintaining its edge will not depend ultimately on following a script laid down by global mega-corporations.

Corporate pundits suggest the island needs another five million people. It's hard to see how a swelling population will improve life for the Republic's citizens. Singapore can only be successful, long-term, if it works for Singaporeans.

COUNTERPOINT

The HUMAN CITY

by Joel Kotkin

A city is not a clock, or a machine, but a place for biological organisms called humans, who need to reproduce to survive.

In this respect, we need to place people and families, not buildings, profit maximisation and the often bloated notions of 'sustainability' at the centre of conventional urbanism. This can take many forms, in American urban neighbourhoods and suburbs, as well the heartlands of Singapore. Our focus should be not on the grandiose, but on human scale, placing family life in the centre of the urban landscape, providing greater opportunity for small and home based businesses.

Ultimately cities should be about creating opportunities, what Descartes called "an inventory of the possible", for a broad range of the population. The kind of luxury city promoted by New York City Mayor Michael Bloomberg propels the middle class out of cities and in the case of Singapore, perhaps out of the Republic as well.

High-income individuals, some singles and childless couples may yearn for terraces in Corbusian towers, but this is preferred by and affordable for only a relative few. People need more human scale development, with lots of open space for people to breathe and reconnect with nature. Singapore may not be able to build North American-style suburbs, but it can design communities that work for families.

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Dense urbanisation has economic, environmental and demographic implications that need to be acknowledged and mitigated. By its nature, density is expensive. Where densities are high, real estate prices tend to follow. The more a region is concentrated, the greater the tendency to bifurcate by class and income. Manhattan, for example, has an income inequality level twice that of the United States, and one that approaches developing countries like Namibia.

Contrary to claims by urbanists, the environmental benefits of 'cramming' are not necessarily correct. Studies in Australia and Spain reveal that energy expenditures per capita are higher in dense city households than in the suburbs.

In addition, a significant portion of warming around the planet can be traced to what is known as 'the heat island effect'. In essence, as you raise density and spread concrete, you create higher temperatures, which is one reason why urban cores such as Manhattan, or even downtown Phoenix, are so much

warmer than surrounding areas. Density has its environmental benefits, but they are far less universal than commonly asserted.

In a recent paper we produced with Singapore's Civil Service College, and Chapman University in California, we showed that the biggest impact flaw with densities lies with demography. Studies in the United States, United Kingdom, European Union, Canada and East Asia show a strong correlation between high densities and low fertility rates. In Manhattan the majority of households are single. In Washington, DC, 70% of all households have never had children. High-density, high-cost environments in East Asia such as Taipei, Tokyo, Singapore and Hong Kong have the lowest fertility rates on the planet.

The implications of growing childlessness – particularly in Asia and Europe, but now even the United States – are profound. Without a sufficient new generation, all these countries will become economically unsustainable as an aging population is supported by ever fewer workers. Innovation, social cohesion and economic growth all necessarily suffer in a geriatric, post-familial environment.

Japan represents the cutting edge of this new reality. Its slow birth rate and high degree of singleness – where roughly one in three Japanese women of the current generation will never marry – has already created a financial disaster. Pensioners continue to exact more revenues while the workforce shrinks. In Japan even sex is going out of fashion; a growing number of young Japanese men and women express little interest in the opposite sex. Japan, arguably the world's densest major nation, will shrink to half its size by 2070 at current fertility rate. Tokyo, home to 40 million today, will be the abode for a very old population almost half that size.

Building the Human City provides an alternative to this largely childless, and perhaps somewhat joyless, future. We need to imagine a future that retains the magic of cities without sacrificing all the comforts of the village. A successful urbanism needs to be productive, and also a congenial home to families and children. Without one, the other is ultimately impossible.

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applications

Cities are invited to nominate teams headed by the city leader (governors / mayors / municipal commissioners) together with two other senior officials responsible for urban planning, development and governance.

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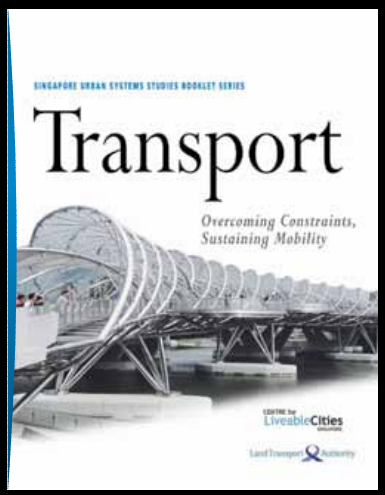

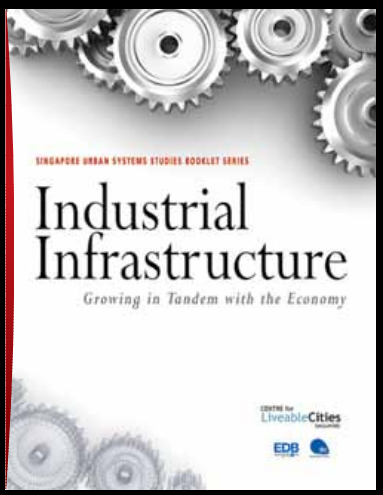

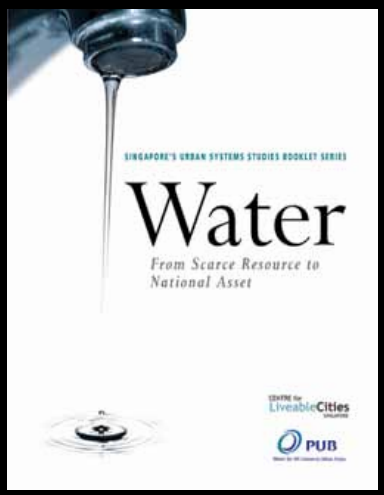

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