

ISSUE 9 • JUL 2016

URBAN SOLUTIONS

Interview

Lawrence Wong
Gabe Klein

Opinion

Basuki T. Purnama,
Len Brown & Ko Wen-je
Olaf Scholz
Park Won-soon

Essay

Henk Ovink
Wong Mun Summ &
Richard Hassell

City Focus

Medellín

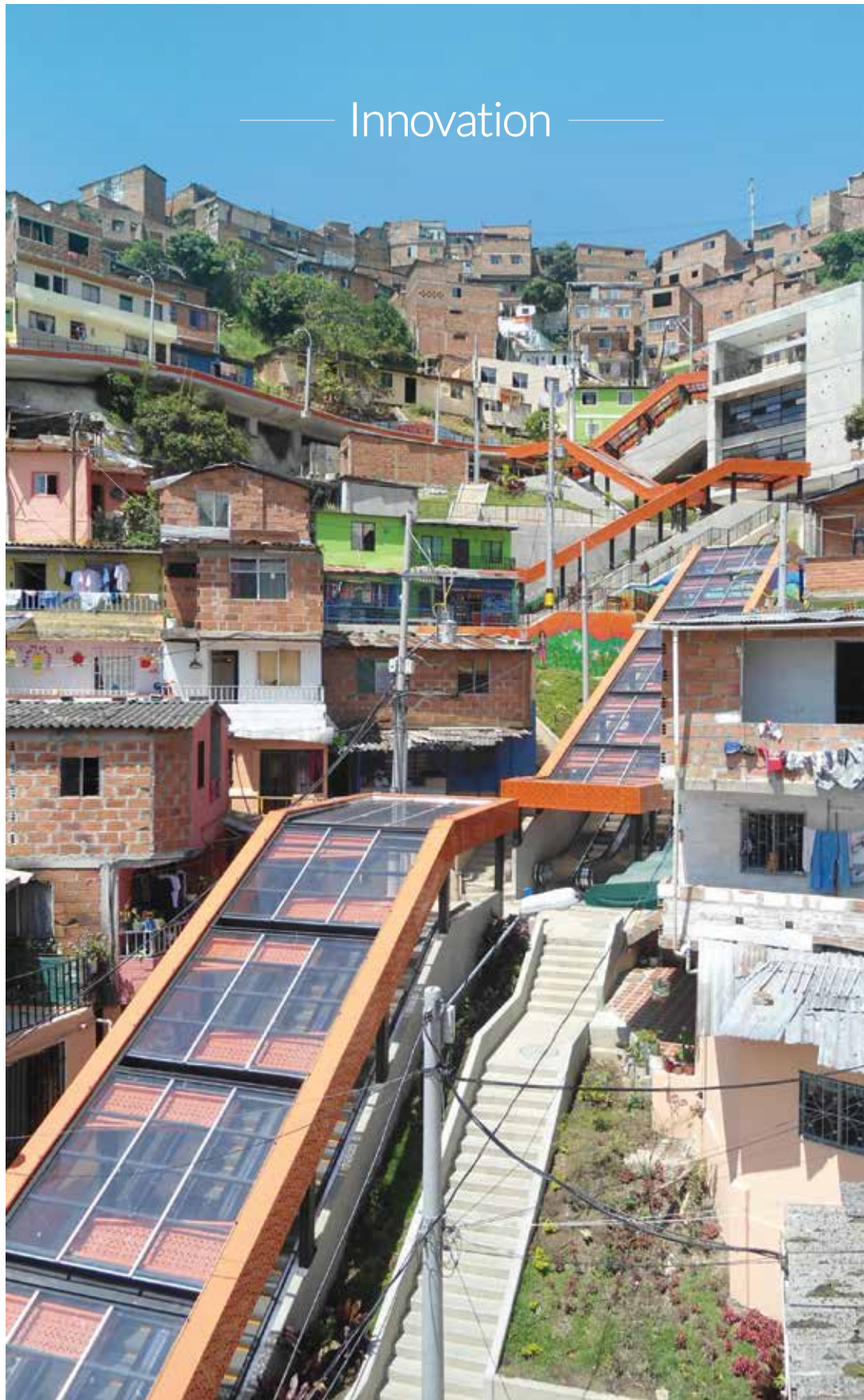
Case Study

Singapore
New York City
North East Lincolnshire

Young Leader

Karen Lee Bar-Sinai
Eugene Tay
Bulelwa Makalima-Ngewana

— Innovation —



A biannual magazine
published by

CENTRE for
Liveable Cities
SINGAPORE



Connecting Cities



As more of the world migrates toward urban centers, we need smart insights and technologies to make **CITIES WORK BETTER**.

MasterCard links residents and visitors to what matters to them for a more inclusive, sustainable and **CONNECTED LIFE**.

For more information, visit
[mastercard.com/connecting-cities](https://www.mastercard.com/connecting-cities)

Temasek Foundation Leaders in Urban Governance Programme

7-11 November 2016

The Temasek Foundation Leaders in Urban Governance Programme (TFLUGP) is an exclusive 5-day mayoral programme. Practitioner-focused and action-oriented, it allows participants to learn how Singapore overcame its challenges through a whole-of-government approach to creating a highly dense yet highly liveable city.



Through seminars, panel discussions, site visits, and dialogue sessions, the Programme will explore the following key themes:

- Integrated long-term planning
- Liveable high-density communities
- Governance & infrastructure
- Sustainable development
- Competitive economy

why TFLUGP?

- **Best Practices and Insights** into Singapore's development strategies
- **Exclusive Dialogues** with past and present Singapore leaders
- **Expert-Mentored Action Plan** for cities to implement over one year
- **Networking and Peer Learning** with experts and participating city leaders
- **Site Visits** to experience urban solutions first-hand

past speakers include

Mr Khaw Boon Wan

Coordinating Minister for Infrastructure & Minister for Transport

Dr Liu Thai-Ker

Chairman, Centre for Liveable Cities Advisory Board

Mr Peter Ong

Head, Civil Service and Permanent Secretary (Finance)

Dr Cheong Koon Hean

CEO, Housing & Development Board

RADM (NS) Chew Men Leong

CEO, Land Transport Authority

Mr Ng Lang

CEO, Urban Redevelopment Authority

Mr Andrew Tan

CEO, Maritime Port Authority

Ms Usha Rao-Monari

CEO, Global Water Development Partners

past participants

"All who mentored us this week are the cream of urban planning, sharing real-life, not textbook, experiences."

Rohan Seneviratne, then Additional Secretary, Ministry of Defence and Urban Development, Sri Lanka

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.

Cities should submit a concept paper on a project related to a challenge they wish to implement over a year. Visit www.clc.gov.sg/Training/international.htm to apply.

Application deadline is 1 Oct 2016.

selection criteria

- Fluency in spoken and written English
- Relevance of proposed project to making highly dense cities more liveable

programme fees

S\$13,500 (inclusive of accommodation)
Sponsorship from Temasek Foundation is available. Eligibility criteria apply.
See application form for details.

"The programme will be useful for the local city planning and administration for a sustainable development of the city of Visakhapatnam."

Burla Ramanjaneyulu, then Commissioner, Greater Visakhapatnam Municipal Corporation, India

CONTACT US

Jazmine Lau
jazmine_lau@mnd.gov.sg
T: +65 6645 9965
F: +65 6221 0232

CENTRE FOR LIVEABLE CITIES

45 Maxwell Road #07-01
The URA Centre
Singapore 069118
www.clc.gov.sg



A joint programme by

URBAN SOLUTIONS is a bi-annual magazine published by the Centre for Liveable Cities. It aims to equip and inspire city leaders and allied professionals to make cities more liveable and sustainable.

Set up in 2008 by the Ministry of National Development and the Ministry of the Environment and Water Resources, the Centre for Liveable Cities (CLC) has as its mission “to distil, create and share knowledge on liveable and sustainable cities”. CLC’s work spans four main areas—Research, Capability Development, Knowledge Platforms, and Advisory. Through these activities, CLC hopes to provide urban leaders and practitioners with the knowledge and support needed to make our cities better. www.clc.gov.sg



CLC is a division of



Advisory Panel

Dr Liu Thai Ker (Chairman)

Chairman
Centre for Liveable Cities

Dr Isher Judge Ahluwalia

Chairperson, Board of Governors
Indian Council for Research on International Economic Relations

Bindu N. Lohani

Vice-President for Knowledge Management and Sustainable Development
Asian Development Bank

Yumiko Noda

Partner and Head of PPP Infrastructure & Government, Asia-Pacific
PricewaterhouseCoopers

Tan Gee Paw

Chairman
PUB, Singapore’s National Water Agency

Prof Marilyn Jordan Taylor

Dean of the School of Design
University of Pennsylvania

Editorial Team

Dinesh Naidu Joshua Sim
Hazelina Yeo

Editorial Consultant

Tuber Productions Pte Ltd

Design Consultant

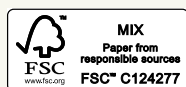
Green House Design + Communications Pte Ltd

URBAN SOLUTIONS welcomes feedback from readers.

Contact

Joanna Tan
T +65 6645 9560 E MND_CLC_enquiries@mnd.gov.sg

45 Maxwell Road #07-01, The URA Centre
Singapore 069118



ISSN 2301-3540 (print)
ISSN 2301-3532 (e-version)

© 2016 Centre for Liveable Cities, Singapore

Opinions expressed in **URBAN SOLUTIONS** do not necessarily represent the views of CLC. While the publisher has taken reasonable care in compiling the magazine, it shall not be liable for any omission, error or inaccuracy.

E-version: www.clc.gov.sg/Publications/urbansolutions.htm

Image Credits

- MND: 6, 8, 9; *edited*
- Hazelina Yeo: 10
- Sunscap: 11; *edited*
- MND: 12(1), 12(2)
- CLC: 14
- CLC and ULI: 16; *edited*
- Gabe Klein: 18(1); *edited*
- John Greenfield: 18(2); *edited*
- Chicago Department of Transportation: 18(3); *edited*
- Chicago Department of Transportation Bicycle Program: 19
- CLC and ULI: 20, 21; *edited*
- District of Columbia Department of Transportation: 22
- CLC and ULI: 23; *edited*
- URA and LTA: 39; *edited*
- URA and LTA: 40
- URA and ECDA: 41; *edited*
- BIG Team/RBD: 43; *edited*
- MIT CAU, ZUS, Urbanisten Team/RBD: 44
- OMA Team/RBD: 45; *edited*
- SCAPE Team/RBD: 46; *edited*
- Cameron Blaylock/RBD: 48; *edited*
- RBD: 49; *edited*
- WOH: 53, 54(1), 54(2), 55, 56, 57(3), 59(2), 59(3), 59(4); *edited*
- Patrick Bingham Hall: 54(3), 57(2), 57(4), 58; *edited*
- Alcaldía de Medellín Cuenta con vos - flickr.com/photos/alcaldiadem/14680882332: 61, CC by-NC-SA 2.0
- Guía de Viajes Oficial de Medellín - flickr.com/photos/54818270@N05/6396569957: 63(1); *edited*
- David Alejandro Cabrera Ortiz - flickr.com/photos/96949872@N04/17408831945: 63(2), CC by-NC 2.0; *edited*
- Guía de Viajes Oficial de Medellín - flickr.com/photos/54818270@N05/5277418317: 64(1), CC by 2.0; *edited*
- Sergio Fajardo Valderrama - flickr.com/photos/sergiofajardo/3217459135: 64(2), CC by 2.0; *edited*
- Guía de Viajes Oficial de Medellín - flickr.com/photos/54818270@N05/6396583785: 65
- Municipality of Medellín: 66(1)
- Alcaldía de Medellín Cuenta con vos - flickr.com/photos/alcaldiadem/13720459133: 66(2)
- Alcaldía de Medellín Cuenta con vos - <https://www.flickr.com/photos/alcaldiadem/23881543926>: 66(3), CC by-NC-SA 2.0
- Urban Development Enterprise: 67(4)
- Alcaldía de Medellín Cuenta con vos - flickr.com/photos/alcaldiadem/13304309744: 68
- Abhishek Kumar - flickr.com/photos/abhishek_kr7/3227742428: 71; *edited*
- Yosomono - flickr.com/photos/preetamrai/6138634452/: 72, CC by 2.0; *edited*
- NUS Enterprise: 73; *edited*
- DanielFoodDiary.com: 74(1)
- SG Food on Foot: 74(2)
- MCL Singapore: 75(3); *edited*
- JTC: 75(4)
- Thefuturistics - flickr.com/photos/thefuturistics/3157191617: 77, CC by-NC 2.0; *edited*
- ZUMA Press inc./Alamy: 80(1)
- Richard Levine/Alamy: 80(2)
- Macro Sea: 81(3); *edited*
- Valery Rizzo/Ferra Designs: 81(4); *edited*
- Mark Richardson/Alamy: 83; *edited*
- ENGIE: 84(1), 84(2); *edited*
- drgillybean - flickr.com/photos/drgillybean/6984909863: 85(3), CC by-NC-ND 2.0
- Modal Training Ltd: 85(4)
- David Wright - flickr.com/photos/dhwright/4684350115: 85(5), CC by 2.0
- ENGIE: 86, 87
- CLC: 89–93; *edited*
- Karen Lee Bar-Sinai: 94; *edited*
- Eugene Tay: 96; *edited*
- Lisa Burnell: 98; *edited*

CC by 2.0 – <http://creativecommons.org/licenses/by/2.0/legalcode>

CC by-ND 2.0 – <http://creativecommons.org/licenses/by-nd/2.0/legalcode>

CC by-SA 3.0 – <http://creativecommons.org/licenses/by-sa/3.0/legalcode>

CC by-NC-ND 2.0 – <http://creativecommons.org/licenses/by-nc-nd/2.0/legalcode>

Some original images have been edited for page layout purposes. Every effort has been made to trace the copyright holders. The publisher will correct any omission of due acknowledgement in the online version, and in any subsequent printing.



#citydigitization

“Digitization offers countless opportunities to improve cities today in ways that will ensure an even better future.”

— Anil Menon, Global President,
Smart+Connected Communities, Cisco



Visit the Cisco Solutions Showcase at
World Cities Summit 2016 in rooms 4611/4711

cisco.com/go/smartconnectedcommunities



Contents



INTERVIEW

- 06 Lawrence Wong
Co-Creating the Future City
- 16 Gabe Klein
The Business of Change



OPINION

- 24 Roundtable:
Basuki T. Purnama,
Len Brown &
Ko Wen-je
Fresh Directions in
Urban Governance

- 30 Viewpoint:
Olaf Scholz
Driven by
Inclusiveness and
Diversity
- 34 Counterpoint:
Park Won-soon
Powered by Citizens



ILLUSTRATION

- 38 URA Digital Toolbox
Experimenting with Maps
- 88 The Future of Us
Exhibition
Coming Together
to Dream



ESSAY

- 42 Redesigning the Design
Competition
Henk Ovink
- 52 Garden City Mega City
Wong Mun Summ &
Richard Hassell



CITY FOCUS

- 60 Medellín
A Sustained
Commitment to
Transformation



CASE STUDY

- 70 Singapore |
LaunchPad@one-north
Helping Start-ups
Take Off
- 76 New York City |
Brooklyn Navy Yard
Reviving Good
Industrial Jobs
- 82 North East Lincolnshire |
Public-Private Partnership
A Transformative
Relationship



YOUNG LEADER

- 94 Karen Lee Bar-Sinai
Defusing Conflict
with Design
- 96 Eugene Tay
Making Zero the Hero
- 98 Bulelwa Makalima-
Ngewana
Creating Spaces to be
Proud of



FROM THE EXECUTIVE DIRECTOR

Innovation is the Solution

Innovation is something close to my heart.

In this special issue of *Urban Solutions* for the World Cities Summit 2016, we explore systemic innovations around the world that are changing the way cities are governed and managed.

Singapore's Minister for National Development Lawrence Wong shares how his government is charting new ways to co-create solutions with citizens. CLC's Gene Tan and Wan Wee Pin elaborate on one such way—an imaginative exhibition of Whole-of-Government plans that also encouraged citizens to get involved in shaping their future.

How do you implement good ideas despite resource constraints? Gabe Klein, former Transport Commissioner of D.C. and Chicago, reveals some manoeuvres from his start-up experience.

Can we rethink governance? Mayor Park Won-soon shows us how citizens take the lead in setting successful policies and outcomes for Seoul's One Less Nuclear Power Plant initiative. A case study of the North East Lincolnshire Council's innovative outsourcing strategy shows that citizens can be the biggest winners when public-private partnerships align incentives to benefit the public.

We shine the spotlight on trendsetting urban planners and architects. The cutting-edge digital planning tools developed by the Urban Redevelopment Authority of Singapore integrate advanced mapping technologies with data analytics to better plan for the provision of amenities. Henk Ovink shares his insights from organising Rebuild by Design, while architectural firm WOHA takes us through their exciting strategies and solutions for the future mega cities of the world.

What drives innovation? Mayor Olaf Scholz says Hamburg's secret is to embrace diversity among his people. Physical infrastructure can be drivers too—case studies on the JTC LaunchPad and Brooklyn Navy Yard show how providing affordable industrial space in high-cost global cities, through creative revival of disused spaces, can promote key economic activities.

We also look at how other cities are innovating. In Roundtable, the Governor of Jakarta and Mayors of Auckland and Taipei discuss what their cities have done in the areas of public engagement, governance, smart city initiatives and transportation; and we zoom in on Medellín, the 2016 Lee Kuan Yew World City Prize Laureate for being an inspirational model of transformative urban innovation. Outside of the public sector, three World Cities Summit Young Leaders from Cape Town, Jerusalem and Singapore reveal how they are fighting to improve their cities in different ways.

I believe innovation is the solution to our most pressing challenges, and part of being innovative is to keep an open mind and learn from others. This is why we organise the World Cities Summit—to exchange notes and forge new partnerships. Let us continue to collaborate, innovate, and create urban solutions that will change the future of our cities, and our world.

Khoo Teng Chye
Executive Director
 Centre for Liveable Cities



Minister Lawrence Wong at a Car-Free Sunday event, an initiative to encourage a “car-lite” culture.



Lawrence Wong

Co-Creating the Future City

One of Singapore's younger generation of leaders, National Development Minister **Lawrence Wong** has been tasked with charting the city-state's infrastructure and environmental development. In this interview, he tells CLC's Jessica Cheam how the government seeks innovative ways to co-create the future with citizens.

The word “co-create” has been increasingly used by the Singapore government to galvanise citizen participation in policy decisions and public programmes. How would you define this and what role can citizens play?

Nation building is about partnerships. The concept is not new: if you look back at our history, one of our founding leaders, Mr S Rajaratnam, talked about Singapore being a “democracy of deeds”, and this meant having citizen participation at all levels, as he put it, “to solve practical problems in a practical way”. So we've been doing that from the beginnings of Singapore, in different ways, through our volunteers and grassroots.

More recently, we have evolved and strengthened this idea of partnership and citizen participation. A few years ago, we conducted Our Singapore Conversation [a national consultation exercise] to hear from Singaporeans their priorities and hope for the future. This year, we started the SGfuture dialogues to think about Singapore's development for the next 50 years. The key is to go beyond idea generation and start getting people involved in the solutions as well. Ideas are helpful and they contribute towards policymaking, but it's even better to have citizens co-creating the very solutions that will be implemented.

Can you give us a flavour of these ideas, and how have these translated into policies on the ground?

There have been many. One is a URA [Urban Redevelopment Authority] programme called “Our Favourite Place”, which supports people to activate public spaces through ground-up initiatives, such as closing certain streets from vehicular traffic on weekends. It’s been a big success and that’s why URA is prepared to provide seed funding for good ideas, and to help citizens get regulatory approval from different government agencies to translate their ideas into action. We are looking for ideas that can transform public spaces and streets into something that can bring communities together.

The extensive consultation process in the Rail Corridor project was groundbreaking. Tell us about the experience, and were there lessons learnt that can be applied to other projects in the future?

The Rail Corridor is a unique, distinctive site that’s full of history and heritage. It’s a central spine running through our island—much longer than New York’s High Line—that connects more than a million Singaporeans. When the railway line closed in 2011, we felt there was an opportunity to engage Singaporeans in developing the Rail Corridor—from conceptualisation to implementation. That’s why, from an early stage, we started canvassing for ideas on how we can preserve the green spaces while retaining some of the development potential of the land.



01

01 Minister Lawrence Wong at a car-free weekend in Kampong Glam, an initiative by the area’s business owners.

02 Minister Lawrence Wong joins in the discussion on ideas to activate public spaces at one of the SGfuture dialogue sessions.



We received many useful ideas that were fed into the design brief put out for experts to formulate a concept plan. The winning proposal came up with a very good plan. But even after that, we have continued to hold focus group sessions with the community to see how this can be translated into something concrete on the ground. Some students from Regent Secondary School were very excited about the plans, which involved building a nursing home. They proposed bringing the seniors to the gardens near the Rail Corridor,

and also having more water activities at the nearby Pang Sua Canal.

Similarly, we're holding extensive consultations for other projects such as the Jurong Lake Gardens, where there's a major planning review to refresh the gardens and to link them to the new Jurong Lake District, which potentially can become our second CBD [Central Business District] with the terminus for the Kuala Lumpur–Singapore high-speed rail ending there.

“ Ideas are helpful...but
it’s even better to have
citizens co-creating the
very solutions that will be
implemented.”

01





The flip side of citizen participation is that you can't please everyone. How did you balance different expectations?

Well, some groups will favour full preservation without any developments, while others would favour more developments and activities. There will be a range of views but that's what the whole consultation process is about. The different stakeholders will eventually try to form a consensus and move forward. That's what we've tried to do, and the process has not ended.

I'm sure there will be more rich conversations about the balance between conservation and development as we implement the Rail Corridor in phases. Regardless of how it will be implemented, our commitment is to make sure that it is kept seamless and that green spaces are preserved. Ultimately, these conversations will give citizens a strong sense of ownership of these public places.

Let's move to broader challenges. Climate change is going to have a huge impact on us in the coming years. What is Singapore's strategy?

Both climate change mitigation and adaptation are necessary. On the mitigation front, we have committed to reduce emissions intensity by 36% (from 2005 levels) by 2030, and we have a comprehensive plan to achieve this. For example, although we are alternative energy-disadvantaged, we have been pushing for solar photovoltaics. HDB's [Housing and Development Board] move to conduct bulk tenders for solar procurement and solar leasing has been very successful. I've been very surprised by the results as they are able to do it at zero cost. It completely pays for itself through the savings generated from using solar panels.

The other major push is on energy efficiency. I think we've done quite well at reducing electricity consumption and encouraging green buildings, but we can

01 Citizens taking a walk down the Rail Corridor, an important part of Singapore's history since it was built in 1903.

02 The roofs of these public housing blocks in Jurong are fitted with solar panels.

01



do a lot more. If you look at what happened in Japan after Fukushima, they went on a national energy savings campaign after the nuclear power plants were shut down, and saved about 20% of energy over the course of the year. That's huge! Imagine if we shaved 20% off our peak load. I think there is a lot more scope for us to go with mitigation and we will continue to push on that front. But I hope we don't need a crisis to have that kind of savings mindset.

On adaptation, we have to prepare for the eventuality of sea level rises. Singapore will be at risk because we are low-lying. We have already raised the minimum height requirement for land reclamation and we have various contingency plans for coastline protection, erosion and flood-risk mitigation. The other part of it is food security because climate change can also affect global food supply, and we will be vulnerable because we import most of our food. So we're also looking at ways to improve our food resilience.

02



Regarding food security, are we seriously looking at urban farming as a solution?

Yes, I think there is a lot of potential for farming to become more productive in Singapore. Diversification of food sources is important, but we should also improve our local supply. Urban farming includes commercial and community farms. Our commercial farms produce about 7% of our fish consumption, 12% of vegetables, and 25% of eggs, which is not bad. But if you compare our best farms with the most productive ones overseas, their vegetable farms are twice as productive, and their fish farms five to six times more. If we can match that, I think it would significantly enhance our food resilience. We are looking at some of these technologies with AVA [Agri-Food and Veterinary Authority of Singapore], and there is an R&D fund set up to boost farm productivity.

Besides commercial farms, there are more community farms. They may not add significant amounts to food production output, but I think it helps to build that spirit of community in a very positive way and we want to encourage that as well.

“I think there is a lot of potential for farming to become more productive in Singapore.”

Technology is a strong enabler for urban growth and development, but it is traditionally the strength of the private sector. How does your ministry tap technological solutions to achieve its policy objectives?

If you look at our infrastructure and built environment, a lot of the capabilities reside in the public sector. If you think about our underground caverns, industrial buildings and housing infrastructure—we have huge capabilities here. It is something unique to Singapore because we develop through many public sector-led initiatives.

We want to ensure that we continue to grow our expertise, and find ways to turn them into commercial urban solutions that companies can export overseas. Companies like Surbana, Ascendas and Hyflux are good examples.

But the public sector should also recognise that we do not have all the answers and we should rely on new technologies. So we are putting in a lot of R&D investments into corporate labs, corporate research and academics to develop urban solutions.

You co-chair the subcommittee on Future City under the Committee of Future Economy which is tasked to outline Singapore’s economic strategy. Can you give us some insights into this process?

The subcommittee which I am co-chairing is thinking about how urban infrastructure needs to be transformed to support the future economy, and at the same time how infrastructure can be a driver because infrastructural solutions can be a growth sector in its own right.

We have some big ideas like developing our Jurong Lake District as a second CBD, and moving the port from Tanjong Pagar to Tuas to free up waterfront land for development. Beyond that, we’re also looking at clusters around Singapore that can support new economic activities.

One area identified is the e-commerce, digital services and cyber security cluster. We have been discussing how we can provide the infrastructural space to anchor this cluster of digital services, say, in Punggol where the new SIT [Singapore Institute of Technology] campus is. This can become a very exciting place to live, learn, work and play for people in ICT [InfoComm Technology]. We also have the Jurong Innovation District, where the CleanTech Park is, and the Jurong Lake District. That could be a cluster for clean tech and urban solutions companies to form an ecosystem, while creating more jobs for Singaporeans.

Beyond the “hardware” aspect, the whole evolution and development of our city must require citizens and this requires “heartware”. So we’re also thinking hard about how this aspect can be enhanced.



Urban issues are increasingly complex. What do you think are the kind of leadership qualities that we need to tackle these challenges?

Like the past, you need a leader who can set a vision, inspire and persuade people to follow you. In the case of National Development, because of the complex nature of urban work, there's a need for certain pragmatism and to be action-oriented in order to get things done. That's been the whole ethos of MND [Ministry of National Development].

There are two other things which I think are important today. One is persuasion and communication because increasingly it is not about bulldozing your way through but being able to engage diverse stakeholders and find common ground to move forward.

The second is a sense of aesthetics—a sense of space, human scale, and blending nature with design and development—because it's not just about building infrastructure. You need to be tuned to nature and good urban design so that even as we become more developed, we don't feel that we're being squeezed by infrastructure. I think that's an important characteristic for leaders in our sector.

Finally, this interview is for the World Cities Summit issue of *Urban Solutions*. What do you hope the Summit will achieve?

I've always found it very useful to exchange notes with city leaders because all of us are grappling with similar challenges and have innovative ideas to share. If you look around the world, there are at least 400 cities with populations of more than a million people. That's a lot of cities in competition for talent, investments, and to be the next global city. If we can, amidst this competition, have a platform for city leaders to come together and candidly share challenges and effective solutions, I think it would be a useful contribution to address some of the major global challenges. ●

Watch more here:



[youtube.com/playlist?list=PLGKE0U1p8RxjT705x1Rr_UGJvwRrFMSdh](https://www.youtube.com/playlist?list=PLGKE0U1p8RxjT705x1Rr_UGJvwRrFMSdh)

SURBANA JURONG

Surbana Jurong is Asia's consultancy powerhouse for urbanisation and infrastructure developments.

We have a distinguished track record in shaping Singapore's urban and industrial landscape over the last 50 years and we deliver total urbanisation, infrastructure and engineering solutions to support sustainable social and economic growth for our clients.

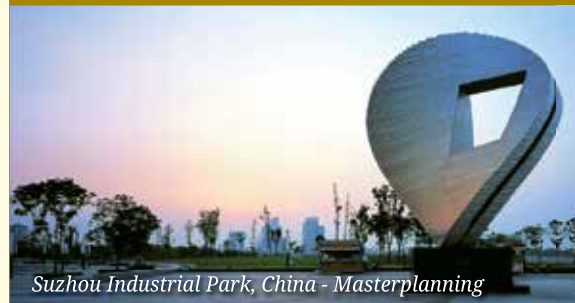
Our multi-disciplinary team of specialists provides one-stop complete value chain consultancy services harnessed through years of successfully completing a wide array of projects across 207 cities in 51 countries worldwide. We have designed and completed more than a million homes in Singapore, completed masterplans for over 30 countries and developed 49 industrial parks around the world.

In June 2015, Surbana Jurong acquired two companies - KTP Consultants Pte Ltd in Singapore and Sino-Sun Architects & Engineers Co. Ltd in China. These two acquisitions will grow our staff strength by 25%, strengthen our infrastructure development capabilities and bring our market reach in China to 16 cities.

We also announced in November 2015 that we have taken a 20% equity stake in China's CITICC (Africa) Holding Limited, a USD300 million investment platform set up between International Financing Company (IFC), a member of the World Bank Group, and Chinese multinational construction and engineering company, CITIC Construction Co., Ltd - which would see us potentially developing 30,000 affordable homes in Africa in the next five years.

Surbana Jurong also took up a 8.4% stake in American software company, FLUX Factory, Inc (a spin-off from Google X), which builds a collaborative cloud-based software tool for building design, urban solutions and master planning, that will grow our sustainable and building design capabilities.

With over 600 international and local awards under our belt, we have what it takes to understand, anticipate and exceed our clients' expectations. Today, Surbana Jurong employs over 4,000 employees from 40 nationalities in 26 offices across Asia, Africa and the Middle East.



Suzhou Industrial Park, China - Masterplanning



W Hotel, Singapore - C&S Engineering



Project Jewel, Singapore - C&S Engineering



*Techart Plaza, China
- Concept Design,
Development and
Construction*



*Andhra Pradesh,
India - Masterplanning*



Gabe getting a taste of active transport, Singapore style.



INTERVIEW

Gabe Klein

The Business of Change

Gabe Klein was one of the key people behind car-sharing club Zipcar's success in the U.S. before he became the Transport Commissioner of Washington D.C. and then Chicago. He funnelled the start-up spirit into the public sector and implemented highly successful bike-sharing schemes, "complete street" projects and mega projects like the Chicago Riverwalk. In this interview with *Urban Solutions*, the CLC Visiting Fellow tells us that the government has to operate more like the private sector when implementing such schemes and get public buy-in. He believes that public-private partnerships are key to a sustainable urban future.

What are the key ingredients to the successful implementation of the bike-sharing schemes you spearheaded?

Washington was the first large-scale implementation of bike sharing in the U.S. so nobody here had ever seen it before. We wanted to make the service very professional in terms of ease of use, interaction with the web interface and app, and the quality of the bikes and stations, and for it to feel like it belonged to the people. So we had robust planning and public interaction processes. We built

an online mapping tool to crowdsource people's preferences for the locations of bike stations and let the public pick its name, Capital Bikeshare, or as locals say "CaBi". This system needed to be big with lots of nodes to have utility so we started with 100 stations and 1,000 bikes. The bigger it was, the more it felt like transportation and not just a fun service for tourists. And so it came together in a really nice, professional, and colourful, fun package that now spans three states with 400 stations.



01

By the time we got to Chicago, we realised we needed to go even bigger for a city that's 4.5 times the size of D.C. So we launched with 300 stations instead of 100. We spent quite a bit of money designing the look and feel of the "Divvy" brand and the system in partnership with IDEO. We were very successful there. Again, we let the public tell us where they wanted it and then we went big. It's now up to 500 stations in multiple jurisdictions and in Chicago, located every few blocks, within a five-minute walk.

You implemented the Streets for Cycling Plan 2020 in Chicago. Could you share more about your experience planning for, and implementing, the cycling lanes?

02



Well, like the bike-sharing programme, it's very important that the bike lane network felt like it belonged to the people. So we spent about eight months holding public meetings in all 73 neighbourhoods as the mayor called for high-quality cycling facilities within a half mile of every Chicagoan—that's 2.7 million people. We had people who didn't agree with us and also those who supported it. I think we were able to have a constructive conversation. What came out of it was that these needed to be safety projects for all modes, not just bike lane projects. We had to look at it more holistically. When we were going to address an issue on the street, like creating a bike lane, how can we also make it safer for pedestrians? How can we make it easier for people to get to transit? We were able to increase the throughput of vehicles and provide space for cycling, which I think was the outcome of the public outreach and a lot of hard work by the great team at the Chicago Department of Transportation (CDOT).

03



-
- 01 An example of Divvy's successful marketing is this "Divvy Red" campaign where customers who found the rare red bikes were encouraged to post photos of it on social media sites.
 - 02 Chicagoans walking for safe streets on a new pedestrian crossing downtown, as part of the Vision Zero safety initiative that led to a 7.5% decrease in fatalities one year after its launch.
 - 03 A young Chicagoan helping out with bike lane construction.
 - 04 Like a start-up, the CDOT bootstrapped the implementation of half of the announced 100-mile protected bike lanes before federal money came in.



04

You managed to implement 100 miles of protected bike lanes in just four years. How did you do it, and what were the challenges?

We believed in creating “complete streets”, meaning the streets were not primarily for cars. We put together a modal hierarchy that says the streets were for the pedestrians first, transit second, the bike third and the auto last. To our surprise, we had zero backlash as everyone is a pedestrian fundamentally. We started building and retrofitting our streets based on that hierarchy; the aim was 100 miles [160 kilometres] of advanced, protected bike lanes where possible (separated from traffic on major streets), and a total of 645 miles [1,038 kilometres] of bike lanes by 2020. We had no funding so we had to piggyback on construction projects that were already happening, like re-paving projects that overlapped. We also had to market the programme: we hit people in the news, on their street, and explained why we want to do this and the benefits to them. There was some controversy but looking back, not a huge amount, because people understood that we were going to prioritise health, sustainability and economic growth, which the bike supports but the car doesn't.

If you were to advise someone tasked to transform a city's urban mobility, what would be the first things they should do or look into?

I found that I had many more resources than I was used to in the private sector—in the form of people, funding and power to get things done. I think people who've been in government all of their careers may not always recognise the span of control and the change they can effect in short order. I would encourage them to assess their budgets very quickly and understand where the money is coming from and what leverage they have to increase resources where they might need it, say for active transportation. I think that honest, transparent communication with people is very important. One of the strategies that I've tried to employ is to put together a marketing plan based on what we're really trying to do—make cities safer, people healthier, cities more sustainable; to design for children, disabled people, older people; and to create economic growth. It's hard to argue with this mission, particularly if you communicate, responsibly fund and start to execute well.

“I think people who’ve been in government all of their careers may not always recognise...the change they can effect in short order.”





02

Risk-aversion hinders project implementation and innovation. In Singapore, even pilot tests can be resource-intensive and less amenable to feedback and adaptations. How do you create more nimble public agencies?

Coming from the start-up world, I'm a big fan of experimentation, and involving the public in selecting what works. But having said that, when we say pilots, we typically really mean a controlled experiment. If you make your stakeholders—whether it be mayors, council members, shopkeepers, land owners or residents—part of the diagnosis of whether the experiment was working, you'll find that they give you a lot longer leash to play with. Just because it's a pilot doesn't mean it's necessarily by the seat of the pants. But you can put together plans for quick iteration so that you can execute them over and over in different contexts, for different purposes. It's much more fiscally responsible to pilot something, show people how it works, and get their buy-in. We did that with our parking system in D.C., with eight different pilots before we committed millions of taxpayer dollars to a high-tech system that eliminated customer hassle and had huge return on investment for the taxpayers.

In your book *Start-Up City*, you say changes in technology and new business models make it important for governments to be ready to adapt. How has government in the U.S. creatively responded to disruptions?

I'm going to first talk about the introduction of Lyft and Uber and how the government in most cases said, "We're not going to entertain the idea of this competition for our taxi system, so come back later when we're ready."

I would say we did a rather poor job, although some of the technology companies also did a poor job approaching the government. On the upside, it's been a real learning opportunity for both sides. Now there are a lot of government agencies saying, "How do we leverage that service, that business model, that tool to further our own goals?"

After learning from the Uber/Lyft experience, the federal government is now leading with the US\$50 million Smart Cities Challenge—giving US\$50 million to one winning city to institute smart city technology, ranging from sensors, digital wayfinding and Wi-Fi, to autonomous vehicles and so forth.

01 During his CLC Visiting Fellowship, Gabe facilitated a multi-stakeholder workshop to promote a collaborative approach to creating a car-lite district.

02 CLC Director for Research Dr Limin Hee interviews Gabe Klein, as they visited the Jurong district on electric scooters.



01

If we have a healthy dialogue, do pilot tests, align our incentives and share the risks and rewards contractually, we can really serve the citizenry better than we have done in the past. There has been a recognition in the U.S. that the key to a sustainable urban future is through private-public partnerships and a focus on outcomes that we want.

But a dichotomy exists between the public and private sectors, due to misalignment of objectives, incentives and cultures. How can we bridge this divide to create a liveable city?

Coming back to the Uber/Lyft examples, ultimately the customer won. We need the private sector to be more focused on working for the greater good, taking a triple bottom line approach to business—People, Planet, and Profit. If you do that you’ll have a business that’s more sustainable in the long term. Pure capitalism can be dangerous just as an unchecked dictatorship on the government side can be problematic. By having this triple bottom line approach to business and a government that is more focused on return

02

on investment and actually covering their cost—by the way it’s something the Singapore government does extremely well and we can all take a lesson from—then I think it’s easier for the two sides to work together and achieve better outcomes for the citizenry.

You’re a strong advocate of more transparency and productive communication with the public. What are some tips you could offer in terms of cultivating open public communications?

When I joined the government, I was surprised by how opaque the agency was. The creative planners would talk to the community and say “Yes”, while the engineers were saying “No we can’t do that” behind closed doors. So you had an end product that was very different than what we sold to the people. There was also a lot of back-door communications with council members and other elected officials. We made a conscious effort to

01 Washington D.C.’s District Transportation Access Portal provides detailed, real-time tracking of all its Department of Transportation projects. Each listing includes project budget, percentage completion and even number of overdue tasks.

02 Gabe’s first visit to Singapore.



open up and it made the left-brain people uncomfortable, but it was the right thing to do.

If you're going to convince a customer that a product or service is good for them, you've got to explain the features and benefits. So we tapped social media; we communicated two-way in real time and uploaded all projects on our website with weekly progress updates. Whatever happened, we were transparent and we started our own blog to communicate directly with people. All these paid off and people felt they had a voice. If you're on Twitter and somebody keeps tweeting at you, you have to respond. And I would respond personally—I think that sends a message that this is a new day in government. It's very important, particularly if you're going to have an aggressive programme of initiatives.

What is one last piece of advice with regard to your slogan “getting sh*t done” in cities, quickly and effectively?

Commitment is very important—in terms of funds, leadership from the top, publicly stating what we're going to do and when

“The key to a sustainable urban future is through private-public partnerships and a focus on outcomes that we want.”

we're going to accomplish it and really break it down, and committing to listen to the public.

There is no reason not to get sh*t done. It's much more fun. Your staff will be much happier achieving things rather than just talking about it. Singapore has such a rich history of getting things done, and like D.C., you have a vertically integrated government. But much more so—it's the country and the city—so your ability to move fast is unparalleled. The things I did in two years, you should get done in 12 months.

What would take a long time is the cultural shift. For instance, it's warm here. Getting somebody on a bike or walking when they're used to a certain social class like driving a BMW with air conditioning—that's going to take time. Starting sooner is very important because the cultural changes are often the long pole in the tent. ●

Watch more here:



youtube.com/playlist?
list=PLGKE0U1p8Rxjil
NTTdAP0LVg_jh5JJCu0



OPINION

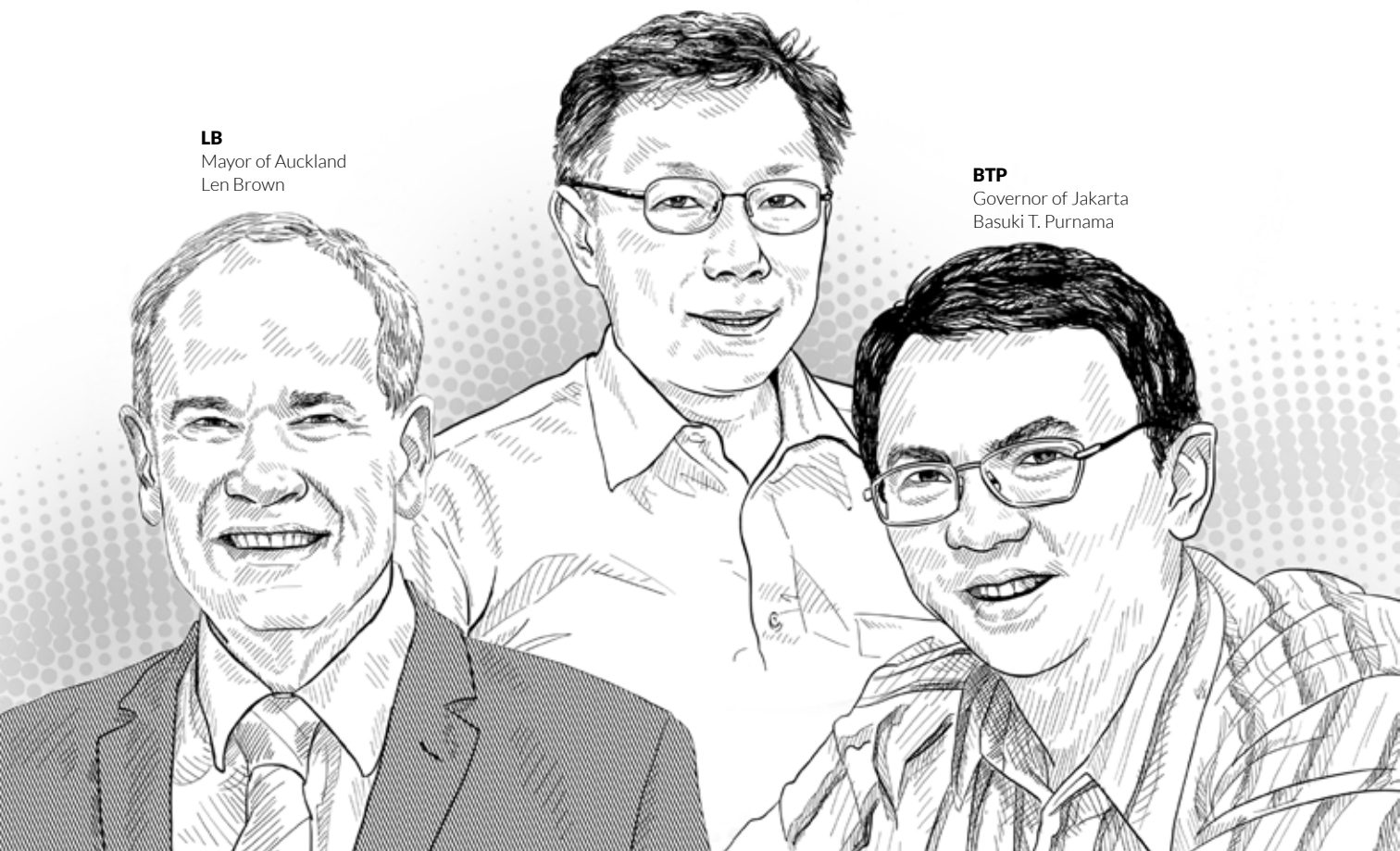
Roundtable:
Jakarta, Auckland, Taipei

Fresh Directions in Urban Governance

KWJ
Mayor of Taipei
Ko Wen-je

LB
Mayor of Auckland
Len Brown

BTP
Governor of Jakarta
Basuki T. Purnama



How can cities innovate to improve lives, and tackle modern day challenges and complexities? Jakarta Governor **Basuki T. Purnama**, Auckland Mayor **Len Brown** and Taipei Mayor **Ko Wen-je** share what their cities have done in the areas of public engagement, governance, smart city initiatives, and transportation. Responses have been compiled from separate interviews, and edited for length and clarity.

On Citizen Engagement

KWJ For a government to make or change policies, it often takes long-term planning, a legislative process and cross-party agreement. This is why most policies don't reflect public opinions in a timely manner. So we set up the Citizen Participation Committee, consisting of members from NGOs and from administrative authorities. It has three working groups to promote public engagement in areas like the policy-making process, open data and data mining, and "participatory budgeting".

LB We do a whole range of consultation on pretty much every decision that is made—every year we publicly consult on our annual plan or budget, and all policy proposals go out for public consultation. Anyone can make a submission on these and we have a dedicated consultation website (shapeauckland.co.nz) where everything that's open for consultation is listed and you can read the documents and make a submission on the site.

BTP Transparency is the cornerstone of the citizens' participation. Every resident can view our executive meetings at our

YouTube channel and they can also post their views and suggestions in various social media platforms that we have provided. In addition, we also gather the public's proposals through development discussion forums (musrenbang.jakarta.go.id) in each neighbourhood, yearly. The insights are able to inform us in advance on what the city needs, transforming the city's yearly planning process to be more efficient. We also publish our budget and spending in an online platform (jakarta.go.id) to ensure public accountability.

Creating Mechanisms for Participation

KWJ We've created several mechanisms to incorporate public engagement in the policy-making process, including Civil Café, and participatory budgeting. The Civil Café is meant to have a relaxed atmosphere where we can use public discussion as a primary evaluation of any type of potential new policies. This year, we drafted a procedure for the process: each department first collects suggestions through Civil Café, then documents and evaluates them, posts notifications for participants online, and finally presents a report indicating which suggestions were or were not incorporated and why.

LB We've got advisory panels for youth, seniors, Pacific peoples, disabled peoples, ethnic peoples, LGBTI people, as well as panels for rural people, for the heritage sector and for the city centre. They make sure that we hear minority voices. We recently had a debate about residential zoning and density, which is usually dominated by older and better-off citizens. So we made sure that two of the Youth Advisory Panel members presented their perspective. They delivered a powerful message on behalf of the youth of Auckland—a message that would probably have been drowned out without them.

BTP Building trust is the key to activating citizens' engagement. To do so, we ensure prompt replies to each citizen's complaints. For example, Jakarta residents can reach us through seven channels, including our Call Centre, email, SMS, Facebook, Twitter, forum and our QLUE app. We receive no less than 4,000 pieces of feedback daily, and each is followed up on by the city's 72,000 civil servants in their respective areas. The response time has improved from an average of two days to less than 12 hours now. The app allows anybody to report situations they find throughout the city, ranging from traffic, flooding, garbage and illegal parking, to things like potholes in the road. Citizens can easily take photos and fill a short form, which will then be relayed to the appropriate public officials. With such direct feedback, we will be able to monitor the performance of each official by seeing how long it took them to respond to public situations. Once completed, the citizen will be notified and the indicator in the system will go from red to green to signal that the job is done.

KWJ The Taipei City Government has a procedure for participatory budgeting. Before we involve the public, citizens need to understand the budget in advance.



“The Civil Café is meant to have a relaxed atmosphere where we can use public discussion as a primary evaluation of any type of potential new policies.”

Mayor of Taipei
Ko Wen-je

Therefore, we launched our “Visualised Budgets” platform in 2015 to give the public an idea of the projects the city has planned for the next year and the distribution of the entire budget. There, people can see many circles of different sizes: each represents a project by different departments; the bigger the circle, the larger the budget. If users click each circle, details of budgetary items emerges.

LB We aim to be as open and transparent as possible in everything we do. Our council meeting agendas and minutes are published online; about a year and a half ago, we started live streaming and recording council meetings. We're trying to make as much data open and accessible, so we're testing an open data platform that makes our data available for download. We have a lot of datasets available—from zoning and planning, to things like alcohol control areas, council assets and locations of schools. We also have a website that allows people to access various census data in Auckland.

BTP Some innovative e-governance strategies we have employed are planning and budgeting systems to increase the efficiency of the city's planning and budgeting process. This year, we have successfully become the first local government in Indonesia to adopt full cashless transactions for all of our operations. This is part of our commitment to promote accountability within the government sector. In terms of transparency, we also launched Jakarta Open Data Portal (data.jakarta.go.id) where everyone can access, use and share various data from the government institutions including data on demography, transportation, environment, public works, disaster management, land zones for housing, subsidised hospitals, etc.

Smart City Benefits

LB One of our biggest challenges is transport and infrastructure provision. Historically the city has under-invested in our infrastructure. We have only recently begun reversing that trend and we use technology to keep track of all our capital projects. Our systems allow us to share data and information across the Auckland Council family and with other partners and infrastructure providers. This allows

us to be smart in our planning, coordinate efforts, and deliver a better service to our customers and wider community.

BTP We launched our “smart city” programme to receive and monitor reports from the public and then follow up on them. The programme covers six areas: economy, mobility, environment, humanity, livelihood and administration. This will make it easier to monitor the roads and rivers—and city officials. Jakarta citizens are also expected to contribute feedback, and can access the information through various channels like smartphone apps, SMS, mail, phone calls and social media. The Smart City Team compiles and processes the data so we can better identify what problems are happening, when and where. Not only to solve the problem, but also to identify the root cause, and to prevent it from repeating.

KWJ The Department of Information Technology and the Smart City Project Management Office identify people's needs and look for corresponding smart technologies.

In the city's smart community and smart public housing projects the latest technologies will be introduced to public housing to provide an affordable, comfortable, safe and convenient living environment for citizens. This is what constitutes a fair social housing policy. The smart community's smart, energy-saving, low-carbon living environment will create a new model for living, while the new design will create a new image for Taipei City.

We're planning smart street lights that go beyond the realm of street lighting technology to include temperature and humidity sensors and remote control. We also want to integrate social design. Our research of public behaviour has enabled

us to pinpoint the best areas to install smart street lighting and also to understand how lighting affects inhabitants around the area. This type of cross-sector collaboration will be the key to developing our Smart City.

Tapping Big Data

BTP We realise having precise data is critical for the next level of development for Jakarta. Not only will Big Data sustain our current development, but it will also enable tremendous change. Smart City is our answer to Big Data of Jakarta. We categorise around 11.2 million people in Jakarta during working hours. With the Smart City Command Center and the data gathered, we aim to better map the real conditions of each sub district, such as residents with disabilities, HIV positive prevalence, school attendance and absence, pregnancy rates and unemployment. Monitoring our citizens' behaviour, in terms of how they commute and transact, provides us with invaluable input to shape our policies. Social-related data are important as we aim to pay more attention to human development and not just physical development. The challenge is to encourage diverse residents to actively utilise the available systems of technology-based reporting so that we are able to compile sufficient and reliable data for decision-making.

KWJ Taipei's Department of Information Technology is working with the private and public sectors, including academia, to develop big data analysis modules. This analyses the city's problems by combining the government's understanding of business problems, domain knowledge and big data platform with professional knowledge from academia and big data analytical tools from the private sector. It could help resolve Taipei's problems. In addition, we're using data to simulate flooding caused by heavy rainfall. This simulation, which is publicly accessible, can help people prepare for



“Historically the city has under-invested in our infrastructure. We have only recently begun reversing that trend [using] technology to keep track of all our capital projects.”

Mayor of Auckland
Len Brown

possible disasters. Another example is parking availability: by combining real-time traffic data and the city's big data and making the results public, we enable people to predict parking availability and YouBike [Taipei's bike share programme] usage. We plan to use this collaboration model—combining public and private bodies with academia—to accelerate and optimise public services, and so create a Smart City.

Transportation Innovations

LB Our major transport innovation has been to replace nearly all diesel-powered passenger trains with new electric units. Over 80% of New Zealand's electricity supply is from renewable (non-carbon) sources. We're also building a City Rail Link that'll double the number of Aucklanders

living within a 30-minute commute of the city centre. These innovations have seen rail passenger transport increase by 95% during my time as Mayor.

We are well on the way to integrated ticketing so when public transport users take more than one mode of transport on a single trip, they are charged by total distance travelled, not by the number of boardings. We've implemented a travel debit card (Hop Card) to implement full integrated ticketing in 2016. As of May this year, 850,000 Hop Cards have been issued by Auckland Transport.

BTP Traffic is one of the challenges in Jakarta. With 75% of commuters using private vehicles and only 25% using public transport, innovation is a must. We have innovated with Railway Train, Bus Rapid Transit (BRT), and currently progressing to Light Rail Transit (LRT) and Mass Rail Transit (MRT) as well as Electronic Road Pricing (ERP). However, the big challenge is how to change mindsets from using private to public transportation.

We realised safety and comfort are key factors, hence we have instructed the BRT operator to install a GPS-based vehicle tracking system, online CCTV system for

BRT Stations and e-ticketing system. We are also aiming for all private bus operators in Jakarta to do the same. We subsidise BRT passengers so they pay a flat fare; operators are paid by the city according to service provided per kilometre. Travel time is also of importance, hence we banned motorcycles from crossing two main roads of Jakarta (Jalan Sudirman and Jalan MH Thamrin) and we will also implement ERP to improve traffic flows. In the future, the funds generated from ERP will be used to provide free buses for the city. Not to mention, we have a special task force focusing on fixing the potholes of the streets in Jakarta to avoid congestion.

KWJ Our public bicycle rental system has 240 rental stations and 7,859 bikes. To make it more efficient to use YouBike, we aim to have 400 stations and 13,000 bikes by 2018, so that people can find a YouBike within a 10-minute walk from anywhere in the city. To raise the usage of bicycles, as well as to build up a sustainable and cycling-friendly city, we made a network of cycle paths by renewing and widening the pavements.

In the future, Taipei City will build separate lanes for pedestrians and cyclists on the twin principles of expanding the pavement and separating it from the cycle lane. Where non-motor-traffic lanes are no more than two metres wide, a single lane will be shared by pedestrians and cyclists alike. **o**



“Not only will Big Data sustain our current development, but it will also enable tremendous change.”

Governor of Jakarta
Basuki T. Purnama



OPINION

Viewpoint: Olaf Scholz

Driven by Inclusiveness and Diversity

“

I have personally
written to more
than 150,000 foreign
residents encouraging
them to apply for
German citizenship.

”



For years now, Germany's economic powerhouse Hamburg has been attracting immigrants to evolve into a highly cosmopolitan city of 1.8 million. To Mayor **Olaf Scholz**, this diversity is what gives Hamburg its charm. In this Viewpoint, he shares that it is now the government's duty to give those who work hard opportunities to excel. This means using the city's economic prosperity to spur inclusive growth and innovation that will, in turn, empower residents to continue adding to the vibrancy of the city.

In 2012, *The New York Times* wrote, "no one tells you how pretty Hamburg is". This "thrilling discovery" was probably due to Hamburg's reputation as a business centre. Germany's world trade is anchored in Hamburg—home to Europe's third-biggest container port, and the world's third largest aviation industry. Hamburg is also a media capital and centre of innovative technologies such as wind power.

Hamburg is famously cosmopolitan: people from 200 countries live here, with one in three residents a migrant or a descendant of one. The city has a population of 1.8 million and is the economic centre of a metropolitan region with over 5 million people. As mayor, I have personally written to more than 150,000 foreign residents encouraging them to apply for German citizenship. We also take freedom of religion very seriously. Plurality is normal here—there are over 100 active religious communities in Hamburg, and an active inter-religious dialogue about topics such as religious instruction in schools. Not only has the city signed cooperation agreements with the Protestant Church, by far the largest grouping, but also with the

Catholic Church, the Jewish community and, recently, an accord with Muslim communities.

Hamburg is growing, largely due to migration, as an increasing number of people see their future in this city. We welcome this; it is the government's duty to give people who make an effort and work hard a proper chance. This includes using economic prosperity to generate growth that is inclusive and empowers residents to continue adding to the wealth of the city.

Education for All

The logical consequence is investment in the city's social infrastructure. Compulsory schooling and equal-opportunity vocational training are keys to integration in Hamburg. All children may attend free day care in the municipal facilities; at every secondary school it is possible to gain a university-entrance qualification and good-quality municipal universities are likewise free. Some successful non-state universities with good international reputations have also been established. And among the numerous institutions engaged in basic

research, the biggest star is Deutsches Elektronen-Synchrotron (DESY), one of the world's leading accelerator centres, which is currently working on building the X-Ray Free-Electron Laser (XFEL) research facility. When completed in 2017, the facility will place Hamburg as the world's premier site for research into the structure of matter.

Employment

In Hamburg, all government departments work together to ensure that no young person—regardless of citizenship—is left behind in terms of employment. For years the German system of combining at-work and theoretical education has produced excellent skilled workers for trade and industry. Hamburg has therefore established a youth careers advice agency to help every young person gain a school-leaving certificate and vocational qualification. We have roped in the Chamber of Commerce and other business confederations so that they can give their input on an institutional level. We seek to work with as many businesses as possible and have developed an especially close working relationship with the bigger Hamburg industries as they are our best bet when it comes to placing young people in jobs.

Spurring Housing Development

A liveable city is nourished by the spirit, zest for life and energy of its residents, and we do not want them worn down by hours of commuting or precarious housing arrangements. Therefore, as soon as I took over the government of Hamburg in 2011, an ambitious housing programme to build new apartments was introduced. Today, there is more construction activity in Hamburg than anywhere else in Germany—a demonstration of what inclusion means for urban development policies.

Each year we have achieved, and often surpassed, our target and we are starting to see signs that price increases are being curbed. But we shall not stop building houses. The population is still growing, and we have also had a recent influx of refugees last year. In spring, the Senate increased the house-building target. How will that work? By including house-building at every stage of town-planning, by facilitating private and public housing construction and making smart use of land.

The “Alliance for Homes” has been Hamburg's response to the need for house-building. It is a voluntary agreement between local authorities, developers, and associations representing landlords and tenants, whereby the city boroughs have agreed to issue 10,000 or more planning

“Compulsory schooling and equal-opportunity vocational training are keys to integration in Hamburg.”

and building permits per year while developers would aim to meet this target collectively, on a voluntary basis. So far, 50,000 permits have been issued since 2011, with 20,000 already built.

Expanding Social Housing

As is usual in Germany, most people in Hamburg rent their apartments. About a third of these apartments belongs to the municipal housing association or other cooperative societies, providing reasonably-priced homes. When municipal building land is sold, social factors play a role as well as the price. Overall, building permission is granted in a three-way split: one third privately-funded housing, one third “buy-to-let” apartments and one third social housing.

Expanding social housing serves to widen our city’s typically stable, diverse social fabric. HafenCity’s development is one such example. This tract of disused port and industrial land increases the central city area by 1.57 square kilometres or 40%. About 7,000 apartments for more than 14,000 people are being built here. Since 2011, we have reserved 30% of the building lots for subsidised housing. There are barrier-free dwellings, child-

friendly homes and apartments for artists. Within walking distance of the main station and with excellent underground train and bus services, the district has space for 45,000 workplaces, cultural events, public parks and educational facilities, including two universities.

Hamburg has tapped road construction projects to benefit house building: a local interest group first suggested that the motorway to Scandinavia, which cuts straight through our city, could be roofed over to reduce noise and unite the districts on either side. Funding is now in place. The “roof” is 3.5 kilometres long, offering 0.25 square kilometres of new, open green space; in return, space for 3,000 new dwellings in an attractive district of the city will be freed up.

Hamburg is characterised by public spaces, shaped by people who meet together as free citizens. The new arrival of many different people is what gives the city so much charm. Today, more than ever, this model of the open urban society needs a public infrastructure that supports housing construction and facilitates access to work and education. One more reason why people say Hamburg is a truly remarkable city. ●



OPINION

Counterpoint: Park Won-soon

Powered by Citizens



“

Many ask me: How did Seoul do it? My answer: The citizens did it. The citizens are the energy.

”

In a bid to reduce its nuclear energy dependence, Seoul embarked on a massive energy reduction initiative—shaped by citizen participation—in 2012. The result was a drastic drop in energy use as citizens and corporations embraced the switch to energy-efficient alternatives and took charge of their energy usage. Mayor of Seoul **Park Won-soon**, elected in 2011 with the slogan “the citizens are the mayor”, shares how citizen power ignited the city’s energy innovations.

What can cities and citizens do together for the Earth that is heating up? The 2011 Fukushima nuclear disaster in neighbouring Japan gave a great sense of crisis to South Korea. Climate change response begins with energy reduction, hence, Seoul began pursuing the One Less Nuclear Power Plant initiative with its 10 million citizens in April 2012.

Operating on the principle of first communicating with citizens before choosing policy directions, the government began by initiating large-scale discussions.

To do this, we created the Citizens Committee—comprising citizens from all walks of life, including professionals, academic circles, religious circles and civic groups—to lead the discussions and the civic governance. Eighteen events were held to hear what citizens and organisations had to say about energy reduction. A government team, whose sole role was to communicate with citizens, was also created. It used online communication channels like Twitter and Facebook, as well as offline communication channels, such as policy workshops, deliberation processes

and citizens’ podiums to get feedback. To involve senior citizens who lacked internet access, the government reached out to organisations, associations and communities that already worked with them.

The One Less Nuclear Power Plant initiative was therefore led by the citizens, for the citizens, and with the citizens. Civic governance was, and continues to be, the essence of our One Less Nuclear Power Plant initiative.

Reflecting all of the opinions of the citizens in our policies was not an easy task. At times, it caused delays in the decision-making process and the implementation process. There seemed to be endless discussions on how to elicit the participation of the citizens. It was a challenge.

But it brought together the wisdom of 10 million citizens, and it brought about changes in the direction of our policies and improvements in existing regulations.

The public discussions generated ideas on tapping alternative or renewable forms of energy: mini solar panels were installed

“Small changes in the habits of the citizens in their daily lives have brought about big changes in the energy future of the city.”

on the rooftops of houses, schools and public buildings while sewage water heat, chimney waste heat and other forms of wasted energy were converted to renewable energy. To boost energy efficiency, buildings, which accounted for 56% of energy use, were retrofitted.

Even though energy is a crucial part of our daily lives, it was difficult to promote the value of policies or to encourage participation, as it is “invisible”. The government tried to raise awareness of our energy policies with the Eco Mileage Programme, which rewarded households that voluntarily reduced energy usage by lowering their electricity bills. More than 42% of households took part.

As a result, energy reduction has become a part of our citizens’ daily lives in homes, schools, and workplaces—it has become a part of Seoul’s culture. Currently, 22,000 students in 500 schools are energy guardian angels who help to prevent energy wastage in homes and schools, and 34 universities are green campuses that have reduced energy usage by 10%.

Small changes in the habits of the citizens in their daily lives have brought about big changes in the energy future of the city. We achieved the first phase goal of reducing 2 million tonnes of oil (the energy generated by one nuclear plant) six months ahead of schedule in June 2014. Many people believed it to be impossible. But we have not stopped there. We have set a second phase goal of reducing the energy equivalent to two nuclear power plants by

2020 and reducing 10 million tonnes of greenhouse gas emissions as well.

The changes brought about by Seoul are spreading to other cities across South Korea. Last November, four local governments in South Korea, including Seoul, recognised the importance of local energy policies, and announced in a joint statement to cooperate on the wise and frugal use of clean and safe energy for a mutually prosperous future.

The changes driven by the citizens are inspiring not only for cities in South Korea but also for cities around the world. Many representatives of cities and organisations around the world are coming to Seoul to learn about our One Less Nuclear Power Plant initiative. Many ask me: How did Seoul do it? My answer: The citizens did it. The citizens are the energy. Civic governance, powered by the energy of the citizens, drove the changes.

Seoul now looks beyond the changes in Seoul and the changes in South Korea to the changes in the world. We now look beyond civic governance to urban governance. We aspire to cooperate with cities around the world for a sustainably prosperous future.

Small actions lead to small changes, which lead to bigger changes. Our actions will form the Earth’s future. A dream we dream together will come true. I hope that the climate action story of the citizens of Seoul will become an important chapter in the history of the earth. ●



Tomorrow belongs to the fast.

Winners and losers will be decided by how quickly they can move from what they are now to what they need to become.

In every business, IT strategy is now business strategy.

Accelerating change.

Accelerating growth.

Accelerating security.

And today, to help you move faster, we've created a new company.

One totally focused on what's next for your business.

A true partnership where collaborative people, empowering technology and transformative ideas push everyone forward.

Accelerating innovation.

Accelerating transformation.

Accelerating value.

Because the next chapter in the story of your organization is ready to be written.

The next new industry is ready to be created.

The next breakthrough that pushes the world forward is ready to be made.

And we are here to help everyone go further, faster.

Accelerating next



**Hewlett Packard
Enterprise**



ILLUSTRATION

URA Digital Toolbox

Experimenting with Maps

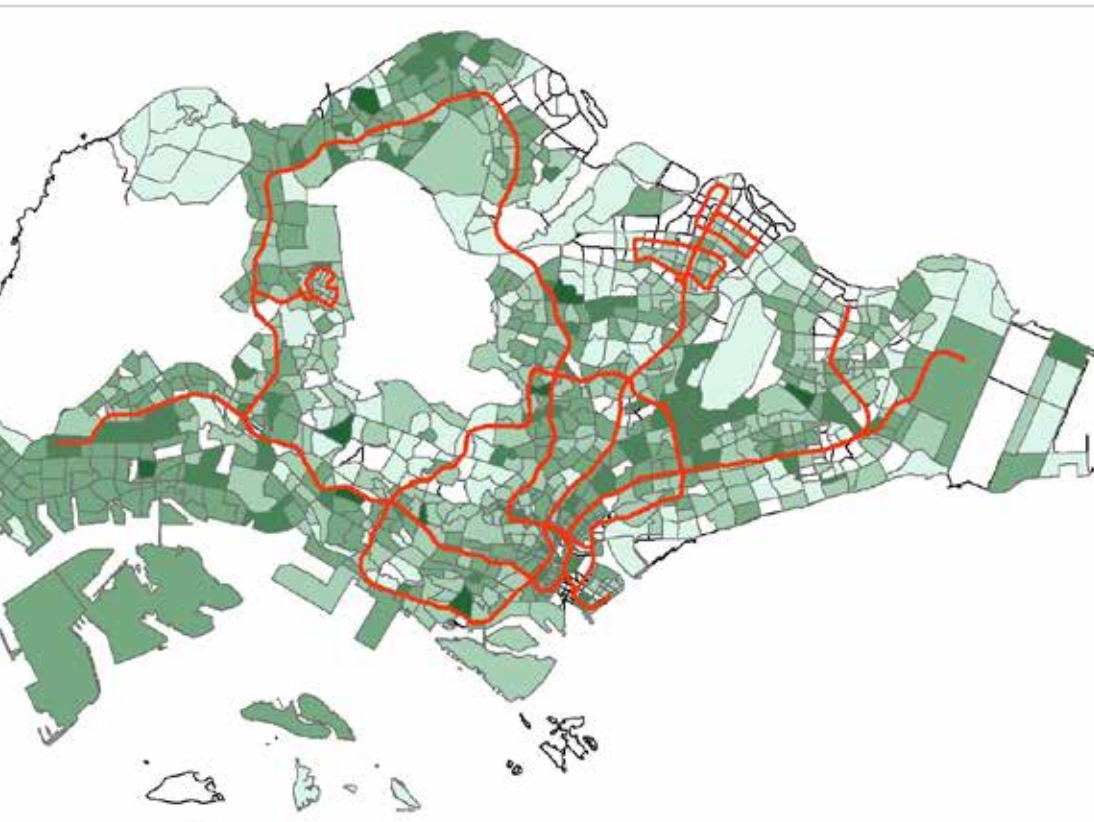


The **Urban Redevelopment Authority** of Singapore is currently experimenting with new mapping technologies to enable urban planners to gain new insights on the provision of public amenities and improve lives.

We live in an age where we are constantly creating and exchanging information. Today, with higher computing powers and capabilities, technology can be leveraged to stitch different data sets together, and to help cities gain insights on the needs of the people and to better plan and provide these services and amenities.






The Urban Redevelopment Authority (URA)—Singapore’s land use planning and conservation authority—is experimenting with and exploring the use of digital planning tools to improve the way we plan to meet the needs of the nation. Potentially useful digital tools include those that

can overlay multiple sets of data such as population and demographics, travel patterns and distribution of amenities over a certain area. This will help city planners draw out patterns and inter-relationships across the different data sets to allow insights into what services people need. Potentially, it would be useful if this capability can be explored further to project the future needs of an area and the trajectory of development. This will bring opportunities for city planners to quickly and more accurately test various scenarios and better plan for the staging of infrastructure development. Where possible, the impact of climate change



Legend
 Rail System

Proportion of Jobs whose Workers Arrive by Public Transport in 2014

 18% – 50%
  51% – 60%
  61% – 70%
  71% – 80%
  81% – 100%

and other factors should be incorporated into the modelling and simulation tools, to help cities better predict and address these issues through better planning, design and mitigation measures.

These tools encourage data sharing and coordination across government which in turn leads to better planning outcomes. For residents, this means enjoying greater convenience and choice of local amenities and, ultimately, a higher quality of life. To find out more, visit the Urban Lab exhibition, “Our Digital World”, at The URA Centre from 28 June to 17 September 2016.

Understanding Commuter Travel Behaviour

The map above shows that people who work in areas near rail stations commute more often by public transport, except those working near the ends of rail lines. Also, many people who live far from their workplace travel by public transport. Together with the Land Transport Authority (LTA), planners from URA are studying travel mode choice in order to understand the implications of decentralisation for travel demand and behaviour.

01

Proportion of jobs whose workers arrive by public transport (analysis done in 2014).

02

Hypothetical projection of the transport accessibility and availability of the area around Jurong East MRT Station.



PTAL (2015)





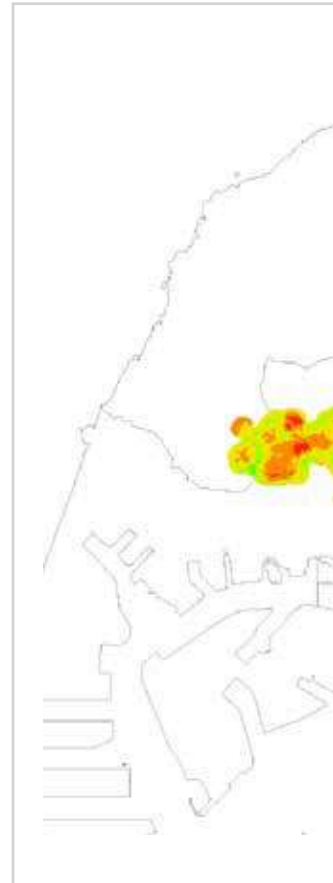
PTAL (2030)*

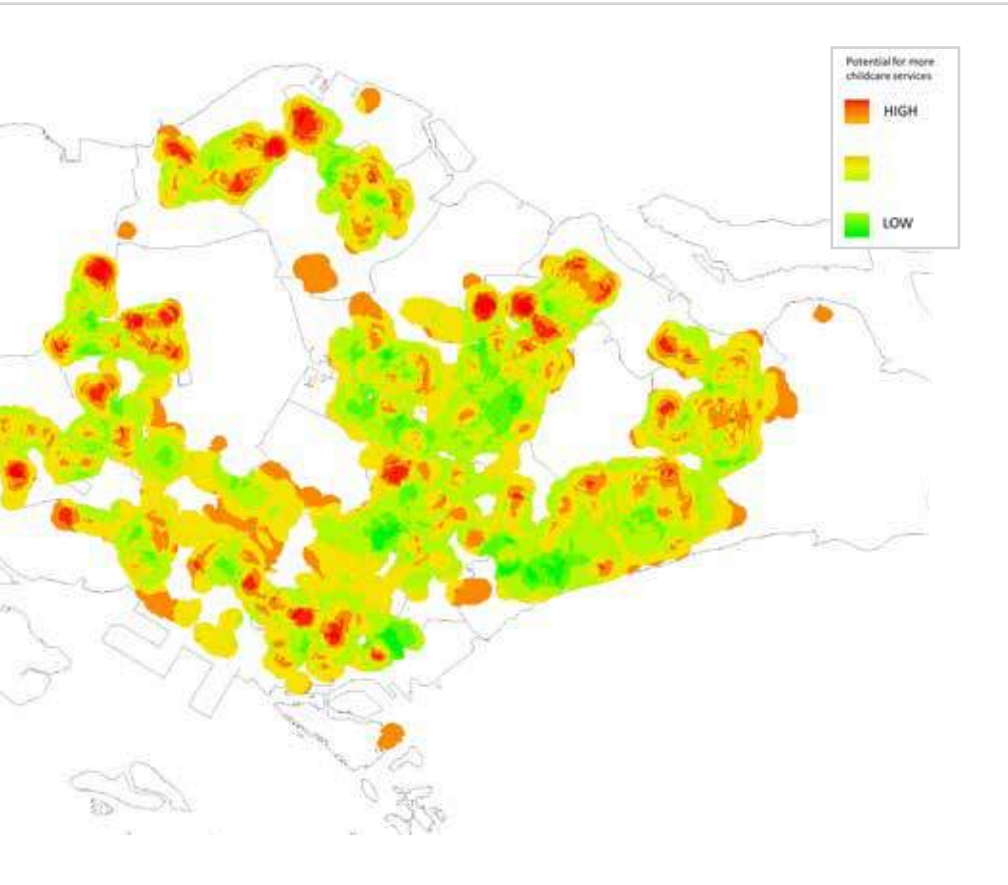
*Hypothetical scenario that includes improvements to Ayer Rajah Expressway and existing bus services, and introduction of new bus services, Jurong Region Line and Cross Island Line



LEGENDS:

-  EXISTING MRT
-  NEW BUS STOPS & SERVICES





03

Island-wide childcare gap analysis map (analysis done in early 2015).

Enhancing First- and Last-Mile Connections and Public Transport Network

Just how far is the nearest bus stop or train station for any resident getting from point A to B? Planners in the LTA and URA want to understand public transport accessibility and availability at the local level. Since 2015, planners have adopted London's Public Transport Accessibility Level (PTAL) methodology to measure the quality of public transport provision for a given area. Planners piloted this methodology in Jurong East, Singapore, and identified potential areas where additional bus stops and services could be provided to improve the public transport network.

Responding to Childcare Needs

It can be frustrating for parents to find care for their children while they are at work when there are no convenient, accessible childcare centres close to their homes or offices. Even if there is a childcare centre nearby, it may be full with a long waitlist. How do planners determine whether there are enough childcare centres provided at the right locations? Using a mapping tool, URA and the Early Childhood Development Agency are able to analyse the number of children aged between two and six years old in all neighbourhoods, and the capacity of all childcare facilities in each location. This allows identification of areas with a critical need for additional childcare services. New childcare centres are now being developed in these areas to offer relief for parents. ○

URA Urban Lab website:



www.ura.gov.sg/uol/urbanlab.aspx



ESSAY

Rebuild by Design

Redesigning the Design Competition

When Hurricane Sandy hit the Northeast of the United States in 2012, it wreaked widespread havoc across the region. Instead of merely focusing on disaster recovery work, the US government saw an urgent need to think of future uncertainties and used Sandy as a springboard for innovation. It launched Rebuild by Design, a design competition that brought designers, researchers, government officials and local communities together in search of solutions to make flood-prone regions more resilient to future threats.

Urgency and Complexity

The 2016 World Economic Forum Global Risks Report puts the impact of water crises as the number one global risk of the next decade. According to the United Nations, 90% of the world's disasters are water-related; by 2050, two billion people will be devastated by floods if we continue with our current practices. Over the next 30 to 50 years the costs of climate disasters is estimated to rise from US\$130 billion dollars yearly to almost US\$1.7 trillion yearly.

It is through water that we feel the impact of climate change the most. Water is key for our

food and energy production; it is an asset if managed right, a severe risk if not.

By 2050, 75% of the world's population will be urban, so cities will be at severe risk if they are not planned and developed to be resilient.

Solving the water issue calls for an inclusive and comprehensive approach, where water serves as the convening power and the catalyst for innovative and sustainable development of our resilient communities. Mankind might be the only species that not only messes up but is capable of dealing with this complexity, moreover exploiting it for the better.



Henk Ovink is Principal of Rebuild by Design and Special Envoy for International Water Affairs, Kingdom of The Netherlands. He served on President Obama's Hurricane Sandy Rebuilding Task Force and developed and led Rebuild by Design, which was awarded the inaugural "Most Groundbreaking Federal Challenge or Prize Competition" by the US Federal Government.





The Big-U, one of the six Rebuild by Design projects to be implemented, is a 10-mile (16-kilometre) protective system surrounding Manhattan that will provide vibrant public spaces while shielding against floods and stormwater.



01

Hurricane Sandy

In the autumn of 2012, Hurricane Sandy hit the Northeast of the United States, the biggest metropolitan region in the U.S. and a great economic power. The storm claimed more than 150 lives, destroyed and damaged more than 650,000 homes and hundreds of thousands of businesses across 24 states. More than 8.5 million people lost power and heat, while many lost their jobs. Altogether, Sandy caused an estimated US\$65.7 billion in damages and economic loss.

The hurricane revealed the true physical and social vulnerabilities that all coastal cities face from extreme weather events continually exacerbated by climate change. Sandy showed how our physical challenges are tied to our social and cultural needs: the socially vulnerable lived in the most vulnerable places, where they were hit hardest by the storm and were fully dependent on others to get back on their feet.

For the Obama administration, it was clear that repairing the damage was not enough. To prepare the region for future uncertainties, all vulnerabilities needed to be addressed. We wanted to use the impact of Hurricane Sandy to leapfrog towards a state of resilience. On this premise, I developed in 2013, for President Obama's Hurricane Sandy Rebuilding Task Force, an inclusive and collaborative process called Rebuild by Design.

Part policy process, part rebuilding programme, and part design competition, it brought all levels of government, stakeholders and residents together to design and develop new standards of regional resilience innovatively. Rebuild by Design was positioned to answer climate change, sea-level rise and future economic, environmental and cultural demands.

Rebuild by Design

Rebuild by Design challenged interdisciplinary design teams to create innovative, implementable solutions for regional resiliency. Ten teams of architects, urbanists, engineers, scientists and activists from all over the world were selected out of 148 submissions. The teams engaged with more than 500 community organisations, held dozens of public workshops, toured hundreds of cities and neighbourhoods, and met with almost 200 government agencies. In 2014, the federal government examined 41 design opportunities and 10 final proposals, and awarded US\$930 million to state and local governments to implement the final six winning designs.

This process of interaction—the research by design and the collaboration across all disciplines in the region—delivered a true understanding of the region’s complexity, its vulnerabilities and interdependencies. It provided insights into the region’s opportunities for viable responses for intervention. Supported by cross-governmental coalitions—partners like New York University’s Institute for Public Knowledge, the Regional Plan Association, the Van Alen Institute and the Municipal Art Society, as well as a group of dedicated funders such as the Rockefeller Foundation and the JPB Foundation—Rebuild by Design evolved into a movement for resilience, dedicated to change the prevailing culture of how things had always been done.

02



- 01 The New Meadowlands combines a restored marshland containing a series of berms and mixed-used developments at the edge to provide flood protection while creating new economic opportunities and recreational options.
- 02 For Hoboken, a comprehensive urban water strategy “Resist, Delay, Store, Discharge” was proposed, which includes coastal defence strategies (resist) and rainwater management (delay runoff, store excess, discharge).

“When rebuilding becomes a ‘copy and paste’ of what was, or at best a re-imagining of what was destroyed, we fail to exploit our disasters.”



Learning from Rebuild by Design

While Rebuild by Design is not a blueprint for worldwide success, its key insights can benefit and influence the sustainable development of other vulnerable regions. Hence, the Organisation for Economic Co-operation and Development (OECD) has embraced Rebuild by Design as an inspiration for public-private partnership and the UN presented it as an example of good institutional arrangements set up to support a nation's adaptation efforts to the ongoing and future impacts of climate change.

There are six aspects of the programme that stand out:

1. Long-term planning coupled with short-term innovative projects

It is important to gain a better understanding of risks, uncertainties and strengths of our future challenges. Hence a regional and comprehensive research is necessary to understand the complexity of the issues at stake. Long-term comprehensive planning is vital for defining the right response and the way forward to deal with this complexity. But these need to be coupled with short-term innovative interventions that will withstand next year's elections.

These projects will inspire and kick-start replication across the region. The connection between planning and implementation is critical: one without the other would fail as plans are left alone on the shelves and projects become incidents.

2. Public-private funding

Public-private partnerships, built on trust and mutual gains, need to be embedded in a process of transparency and accountability. Only then can we get to new ways of financing, matching public and private funds and funding. For this, we need better cost-benefit analyses (CBAs). The needed comprehensive long-term approaches must be addressed in evaluations and analyses to increase transparency and attract donors. Currently, both public and private stakeholders' CBAs do not take these long-term benefits into account. For Rebuild by Design, we developed a special CBA model as there wasn't one in place at the federal government level. Two Dutch organisations helped us with it because they had previously worked on the CBA model for the Dutch Delta Programme and the Dutch Olympic Strategy for the games in 2028.

01 The Living Breakwaters project, when completed, will surround Staten Island's south shore with "reef-streets"—micro-pockets of habitat complexity to host marine life that effectively act as a living protective infrastructure.



3. Coalition building and inclusive collaboration

Rebuild by Design was grounded in the understanding that the real change needed was a cultural one, and thus it had to start with the hearts and minds of the people of the region. We did this by matching up global talent with local talent: partners of all backgrounds with the best professional skills, specific regional ties and personal convictions. This resulted in a cross-cutting collaborative process that engaged over 500 organisations across the region and more than 3,500 people from governments, academia, businesses, investors, communities, activists and more. The process, which was open and built on trust, inclusiveness and participation, aimed at innovation and inclusive cultural change.

4. Programmatic approach

The programmatic approach is the “engine” that ensures the lasting connection between short- and medium-term interventions and the strategy (regional, comprehensive, long-term). It connects decision-making across political cycles with the implementation of the projects and ensures accountability and transparency with clear CBAs as well as instruments of monitoring and evaluation to create an enabling environment for new public-private partnerships to emerge.

5. Building institutional capacity

A strengthened institutional capacity is the inevitable result of such an open and inclusive process. Rebuild by Design built this capacity both

across and within all layers of government and community organisations, support groups and institutions like the Regional Plan Association, New York University and the Municipal Art Society. Because all phases were guided and supported by a multitude of stakeholders, and because monitoring, evaluation and adaptation were part of the process, we learned by doing and incorporated the learning in the adaptation of the process as well as in the institutions’ response and collaboration. At the same time we managed to “institutionalise” the built-up knowledge. For instance, the research guided the allocation of the second tranche of the federal government’s disaster recovery funding allocation. This had nothing to do with Rebuild by Design but the knowledge from our research was so valuable that the federal government immediately implemented it as a way to guide the funding allocation and forced grantees to set it in their proposals.

6. Design

At the heart of the approach stands design, which identifies opportunities and transforms them into innovative examples. Design can connect the regional interdependencies with local needs; it can connect people and places and make tactile what was envisioned, practical what was ambitious. Design is key for showing the added value of investments in a

comprehensive way. Design is essential for the collaborative and inclusive process, building the alliance needed for critical change. Not by a trade-off of interests, but by bridging gaps. Design bridges the gap between quality and safety, between local needs and political capacity, between regional interdependencies and community assets, between economy, society and the environment. Design in that sense is both the “cultural” process as well as the “economic” outcome.

Change the World

The slowness of climate change has led to a slow response, not preparedness. But we have a choice to make! We can choose to leapfrog and be transformative in our approach, collective actions, and collaborations.

When a disaster hits, our first response comes from fear and hatred. We have just lost our homes, our businesses, perhaps family and friends. That is a hard time to ask for innovation, to look ahead and be bold. When a disaster strikes, we tend to look back and restore what was lost. When rebuilding becomes a “copy and paste” of what was, or at best a re-imagining of what was destroyed, we fail to exploit our disasters. We need true resilience to infuse our thinking, and

we need courage and new knowledge to rethink the rebuilding effort from tomorrow’s perspective. All the more since we know that tomorrow will be different. Scientific reports highlight climate change, sea level rise, demographic and economic change, and cultural challenges as the big and certain challenges of our time. Embracing change as a way towards greater resilience opens up an inspiring range of opportunities.

We have to start by acknowledging that complexity needs to be embraced to get a better sense on how to deal with the challenges, and that design, research and collaboration go hand in hand with politics, policy development and investment strategies. We should aim for innovation and implementation to go hand in hand with inclusive collaborations across all sectors, from government to activists and vulnerable communities as well as private and public institutions. Too good to be true? No, it can be done!

Through Rebuild by Design, we were able to create alliances for change, push for research by design and connect with real projects, linking design to politics and advocating reform with new perspectives, through real cultural change. ○

02



- 01 Community collaboration on Lower East Side New York.
- 02 Community engagement on Staten Island.

Designing the Process of Rebuild by Design

The Task Force, with a core group of advisors and staff, created a unique structure for the competition. A successive and connected set of stages was established to orient the design process around in-depth research, cross-sector, cross-professional collaboration, and iterative design development. The design process incorporated a variety of inputs to ensure that each stage's deliverables were based on the best knowledge and talent, and that the final proposals would be replicable, regional and implementable.

Making room for a collaborative and innovative approach was a sidestep away from the institutional world. A detour around negotiations, the process aimed to build understanding and trust.

2 RESEARCH

Objective Establish the broadest possible understanding of the region's vulnerabilities to future risks and uncertainties, to enhance resilience.

Process Rebuild by Design's local partner organisations create an intensive, three-month programme of field research to introduce teams to a variety of local stakeholders, providing a comprehensive view of the storm's effects—the damage it created as well as the longstanding problems it uncovered or exacerbated.

A Research Advisory Board leads the teams through the region to learn from a variety of perspectives, and teams conduct additional research to supplement this on-the-ground work. Research is collaborative across teams and focuses on typologies as well as locations.

Result A public presentation from each team that includes three to five "design opportunities" describing conceptual approaches for interventions and an overall compilation of research submitted by all teams.

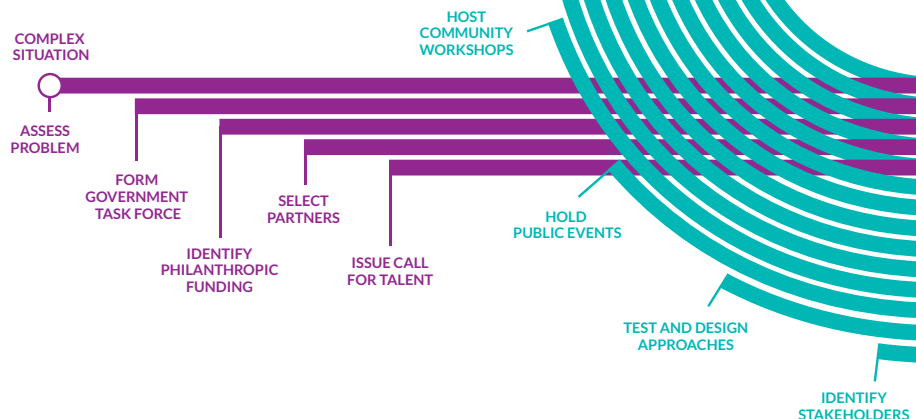
1 TALENT

Objective Gather the talent of the world to work with the talent of the Sandy-affected region.

Process Task Force issues a Request for Qualifications and Approaches calling for teams to assemble themselves in interdisciplinary partnerships to tackle the region's physical and social vulnerabilities.

To incentivise participation, the Federal Government pledges funding to implement the winning designs while private philanthropy pledges prize money for competitors.

Result Ten finalist design teams are selected comprising a diverse set of complementary skills and approaches.



3 DESIGN

Objective Develop implementable solutions that have support from local communities and governments.

Process Housing and Urban Development (HUD) Secretary Shaun Donovan selects, on average, one design opportunity for each team to develop. Teams then gather diverse local stakeholders into community coalitions, with whom they begin a four-month process of co-designing the final interventions. Using meetings,

colloquia, charrettes, and non-traditional events to gain the broadest perspectives, they create solutions that not only address disaster scenarios, but also enrich the daily life of community members.

Result Ten fully developed, implementable resilience proposals champion communities' visions for future development and have support from the local governments.

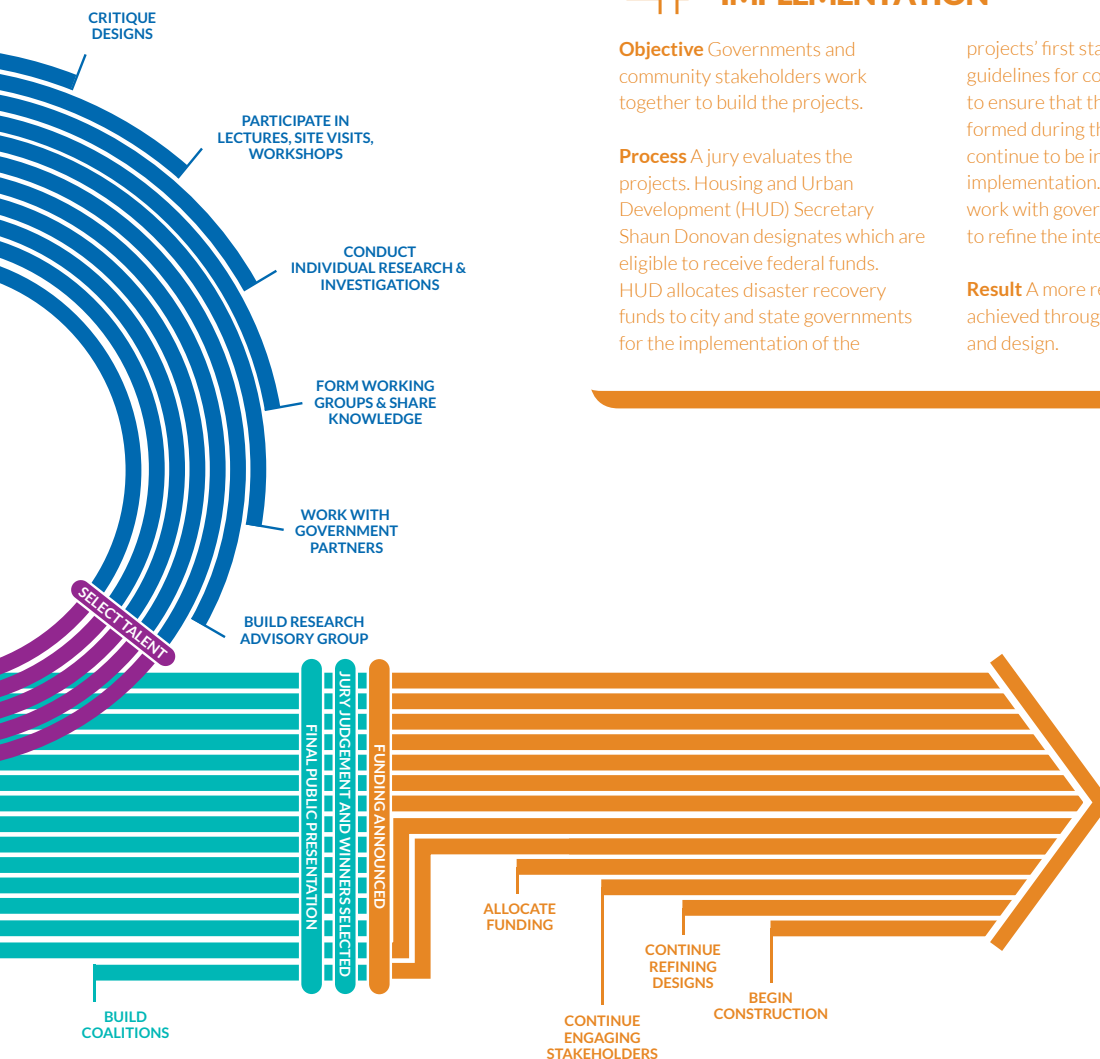
4 IMPLEMENTATION

Objective Governments and community stakeholders work together to build the projects.

Process A jury evaluates the projects. Housing and Urban Development (HUD) Secretary Shaun Donovan designates which are eligible to receive federal funds. HUD allocates disaster recovery funds to city and state governments for the implementation of the

projects' first stages. HUD sets strong guidelines for community involvement to ensure that the coalitions formed during the competition continue to be involved through implementation. Teams are poised to work with government and communities to refine the interventions.

Result A more resilient region achieved through collaboration and design.





ESSAY

Sustainability and Urban Density

Garden City Mega City

The explosion of mega cities globally is not only putting immense pressure on non-renewable natural resources, but also creating mounting tension in the way land is allocated and used. In response, architectural firm **WOHA** puts forth its vision of a mega city that is shared, sociable and sustainable.

Cities are growing at a phenomenal rate, with the number of megacities in the world having more than tripled in the past 25 years. Caught in an unprecedented growth spurt, these cities are undergoing an “urban puberty” phase and rapidly outgrowing their infrastructure.

Since 2001, WOHA has designed and built a series of prototypes as part of a process

of urban re-evaluation, adopting the Asian megacity as an ideal testing ground for new urban typologies and architectural strategies. Re-imagining the early 20th century Garden City, WOHA proposes that a multi-layered, high-density, high-amenity 21st century Mega City that is dense and vertical, yet sociable and sustainable, is the only way forward.



(Left) **Wong Mun Summ** is a co-founder of WOHA.
(Right) **Richard Hassell** is a co-founder of WOHA.



An illustration of a high-density, high-amenity 21st century Mega City.



01

Layering Cities

Over the last two centuries, land has been taken for granted as an infinite horizontal site for building, farming and mining. With exploding mega-city populations, land scarcity is reflected in the competition to meet the conflicting needs of a city, resulting in high land cost and the stark trade-offs between various land uses.

WOHA envisions a city in terms of layers, as a three-dimensional matrix, rather than a two-dimensional grid. This calls for innovative land use solutions that involve a re-planning of cities—vertically, not horizontally. On top of reclaiming, restoring and re-energising our existing land, new land must be created. The use of land needs to be intensified by layering urban and rural environments—residential, recreational, commercial, agricultural and infrastructural—above and below the existing ground level of the city.



02



03



04

01 An example of layering cities at Vanke Cloud City, China.

02 An example of how “cities within cities” enable a 24/7 live-work-play vibrancy at Vanke Cloud City, China.

03 An illustration of domesticated structures recreating neighbourhood streetscapes at SkyVille @ Dawson, Singapore.

04 An illustration of multiple ground levels to achieve “high-density, high-amenity” developments.



“ This not only improves human well-being and comfort, but also restores biodiversity into the city and keeps the natural balance of ecosystems and wild life habitats. ”





02



03



04

Planting Cities

The relentless tide of rapid urbanisation has caused green, open and civic spaces to shrink at an unprecedented rate, while chronic traffic congestion, vehicular and industrial pollution further compound the city's environmental condition. Cities have become harsh concrete jungles, with hard surfaces directly contributing to the urban heat island effect. Citizens are also leading increasingly insular lives, with minimal contact with nature. WOHA's strategies for "Planting Cities" aim to re-introduce biophilic design into buildings. This not only improves human well-being and comfort, but also restores

biodiversity into the city and keeps the natural balance of ecosystems and wild life habitats.

Breathing Cities

The archetypal modernist model for high-rise buildings was originally devised for the cold climate of the United States. Regardless of appropriateness, these glossy, hermetically sealed towers have been replicated across the globe, consuming about 40% of the world's energy, without any real re-invention of its basic typology to suit the changing times and local climate.

-
- 01 A terraced community sky park and community farms at Kampung Admiralty, Singapore.
 - 02 An example of topographic architecture at Parkroyal on Pickering, Singapore.
 - 03 An illustration of "Breathing Cities".
 - 04 An example of a breezeway tower with a breezeway atrium at Oasia Hotel Downtown, Singapore.



01

“By opening up internal spaces to the climate and nature, buildings can ‘breathe’ again.”

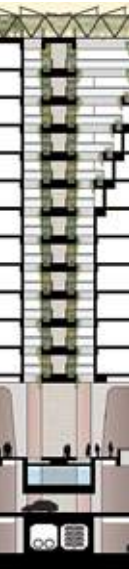
WOHA’s strategies for “Breathing Cities” calls for a return to first principles, with the aim of creating sensible climatic designs that achieve thermal comfort without the need to rely solely on mechanical systems. Vernacular and passive responses to climate are adapted into the tropical high-rise form and translated into contemporary technologies. By opening up internal spaces to the climate and nature, buildings can “breathe” again.

Rating Cities

WOHA’s strategies must be assessed within a larger picture, with holistic planning of the city being the priority. Cities from the 20th century were planned as collections of segregated components, which were measured in terms of their economic productivity. The value of buildings was assessed only by capital cost efficiency—building plot ratios, net to gross floor values, and surface to volume ratios—rather than their overall contribution to the city as components within a self-sufficient system. In contrast, 21st century cities must be

about people and integration, with buildings assessed in terms of their contribution to social and environmental sustainability, as well as their economic viability. To gauge this, WOHA has devised a social and ecological rating system for all city buildings, conducted on behalf of a city’s residents, rather than its property developers.

WOHA’s toolbox includes **Green Plot Ratio** to measure the amount of landscaped surfaces within a building over its site area with the aim of re-introducing biodiversity and green relief into the city. **Community Plot Ratio** measures the total amount of community space within a building over its site area with the aim of encouraging social gathering and human interaction at various scales. To measure the extent to which a building encourages and facilitates the public life of a city, WOHA devised a **Civic Generosity Index**. This rewards buildings that exhibit good neighbourliness in the way they gift the city visually or spatially. The adoption of “urban ecological” approaches to support wildlife within cities is also recognised under an **Ecosystem Contribution Index**, which measures the degree to which a building supplements a city’s ecosystem. Aiming for fully sustainable buildings and cities, WOHA also gives high priority to a **Self-Sufficiency Index** that measures a building’s capacity to provide its own energy, food and water.



02



03



Self-Sufficient City

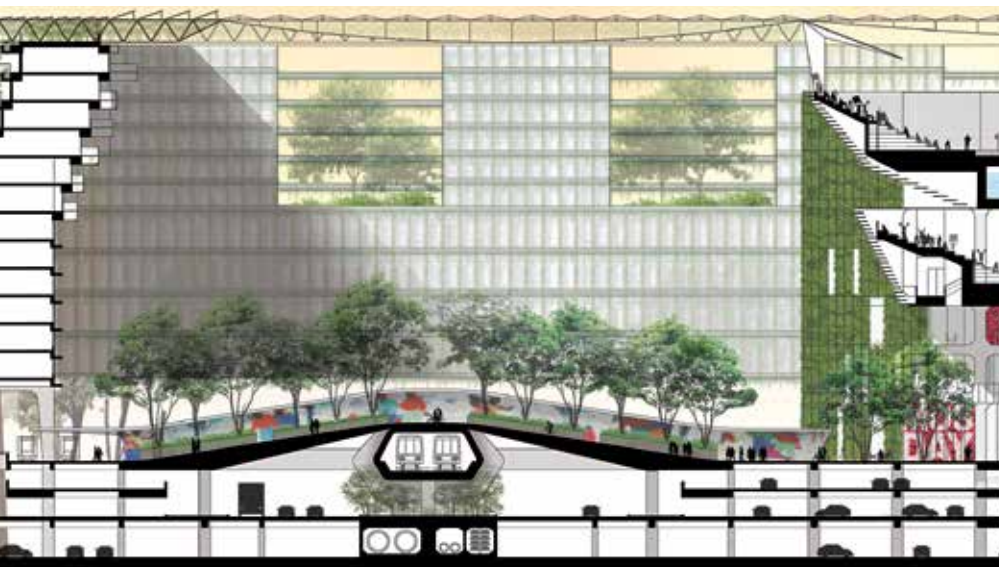
As part of the Icsid World Design Congress 2009, WOHA spearheaded a vertical studio to explore an idealistic self-sufficient city for Singapore in 2050. In 2014, WOHA evolved these ideas and produced a tangible and buildable blueprint for a new town master plan proposal in northern Jakarta.

The design challenge was to house 210,000 people on a 7.3-square kilometre site overgrown with secondary rainforest and constrained by a 60-metre building height

control limit. To create a tropical “eco-town-in-a-forest”, which would retain over half of the existing green landscape, WOHA integrated the site’s horizontal land-use allocations with the stratification of its Self-Sufficient City prototype.

WOHA’s concept of a Self-Sufficient City is not a romantic utopian ideal. It is a realistic vision for our urban future with a blueprint for sustainable development and a progressive philosophy for a dense and vertical, yet sociable and sustainable 21st century Garden City Mega City. ●

04



ROOFTOP CANOPY LAYER:
This layer is both protective and productive, providing shade and shelter as well as solar energy and food harvested from “sky field” crops.

RESIDENTIAL AND WORKPLACE LAYER:
This layer is organised into a series of breezeway courtyards or towers with cross-ventilated “One-Unit-Thick” apartments.

PARKLAND LAYER:
This layer is beneath buildings and comprises tropical community spaces for public functions and social interaction.

TRANSPORTATION AND SERVICES LAYER:
This layer contains all service networks and vehicles.

- 02 An illustration of Singapore in 2050 designed for the Icsid World Design Congress, 2009.
- 03 An illustration of self-sufficiency through the use of solar panels and urban farming in the self-sufficient city designed for a new town master plan proposal in northern Jakarta, 2014.
- 04 An illustration of the layers of amenities within a self-sufficient city designed for a new town master plan proposal in northern Jakarta, 2014.



CITY FOCUS

Medellín

A Sustained Commitment to Transformation





Formerly a dangerous confrontation area for gangs, this water storage tank has now become a vibrant public space.

For its sustained efforts in tackling its socio-economic challenges, the city of Medellín was named the 2016 Lee Kuan Yew World City Prize Laureate. *Urban Solutions* looks at some key infrastructural interventions that have helped the city to make radical improvements to its people's lives.

“In two decades, Medellín was transformed into a model city lauded for radical social innovation...”

In 1991, Medellín earned the dubious honour of being murder capital of the world; the second largest city of Colombia had reached the peak of its homicide rate at a record 395 murders per 100,000 people. The city was in economic and social collapse: unemployment, gang violence, drug trafficking, corruption, poverty and inequality were rife.

That year, however, became a turning point. Colombia introduced a new constitution that decentralised power, giving cities greater authority to combat local problems. The government urged cities to involve local communities and in 1996, introduced a municipal planning system that obliged cities to use participatory planning. This was how the first long-term plan for Medellín emerged. Since then, a succession of committed mayors has tackled the city's biggest issues of violence and inequality through long-term planning and social innovation.

Guided by master plans, Medellín relied heavily on cutting-edge urban design and architecture to respond to its challenges; it poured investments into the poorest, often most violent parts of the city. This approach, known as “social urbanism” rejuvenated the city with visually striking infrastructure, but more importantly changed the way people lived, worked and interacted.

In two decades, Medellín was transformed into a model city lauded for radical social innovation; homicide rates were slashed by 92.1% and unemployment dropped from 23% in 1990 to 10.2% in 2014. Extreme poverty, which stood at 19.4% of the population in 1991, fell to 2.8% in 2015. The city aims to eliminate extreme poverty in the next four years.

Investing in Mobility

Located in the Aburra Valley, Medellín is surrounded by mountains and is known as “the city of eternal spring” for its pleasing climate.





Medellín's valley locale forces informal settlements to sprawl onto mountainsides, where poor accessibility breeds crime and other social ills.



The Botanical Garden of Medellín is a welcoming public space for all.



01

As the city's population boomed, rural migrants began to settle haphazardly on the mountain slopes surrounding the city. They became socially and economically isolated, with poor access to public services; soon, these neighbourhoods became hotspots for crime and violence.

To tackle exclusion, the community had the novel idea of installing a series of escalators on the hillside of the poorest and most violent neighbourhood. The 384-metre journey reduced a strenuous 35-minute uphill trek to a leisurely six-minute ride—allowing everyone, including the elderly and young, to reach the city and access work, school or public services more easily.

Another feature is the cable car system that ferries 30,000 people a day between the hills and downtown Medellín cheaply. Other interventions include the bus rapid transit, a bicycle sharing programme and the new Ayacucho tram that uses pneumatic-powered wheels to climb the city's steep slopes. There are plans to build 400 kilometres of bike lanes and pedestrians pathways to complete a seamless mobility network that will benefit the poorest.



02

Fight Violence with Equality

Mr Anibal Gavira, the city's former mayor, told *Urban Solutions* that attacking inequality is the best way to structurally fight against the roots of violence. To this end, Medellín has invested in a multi-modal public transport system, and is creating public spaces “because in public spaces all persons are equal no matter if you're rich or poor, woman or man, young or old”.

The result: awe-inspiring public parks, libraries, museums and schools, many of which have won global praise and awards.

The city has been creative in freeing up public spaces amid its crammed built-up landscape. Its award-winning UVAs (*Unidades de Vida Articulada*), or Articulated Life Units, were once water storage tanks installed on hillsides and fenced off from the public. As informal settlements sprung up on the slopes, the off-limit zones became the only green spaces left in the neighbourhoods.

To share the space, the city launched a master plan in 2013 to convert 20 enclosures into water reservoirs cum “social clubs”.

01 The famed Library Parks combine public libraries with parks and are strategically located in the poorest areas to form community hubs.

02 School children enjoying the Bethlehem Library Park.

03 The Spanish Library Park is built on what was once one of the most dangerous places in Latin America.

“I have found that building high quality spaces is both the fastest and most effective way of attacking inequality while fighting against violence.”



“The UVAs, which were formerly confrontation areas for gangs, have become meeting points for several neighbourhoods,” said Mr Gavira. “I have found that building high quality spaces is both the fastest and most effective way of attacking inequality while fighting against violence.”

Improving the Quality of Life Through Sustainability

The chaotic expansion of migrant homes also endangered residents and degraded the environment. Heavy rains triggered landslides, killing people while washing away their poorly built homes.

With safety and environmental sustainability in mind, the city decided to limit further growth—not with walls but with a green belt known as the Medellín Circumvent Garden.

Mr Gavira shared that affected families were at first relocated to distant places when works began. It was an unpopular move. Learning from this experience, the city now provides families with safer, better homes built in the same area. To assuage fears of eviction, the city also worked with residents to design the green belt and have employed residents to work on the development as well.



01



02



03

- 01 The Medellín Circumvent Garden will prevent urban sprawl while providing amenities like gyms and footpaths, as well as farming sites.
- 02 With community inputs, each UVA has been uniquely converted into a multi-use public space with amenities ranging from amphitheatres to computer rooms and sports facilities.
- 03 The opening celebration of UVA de la Armonía, a public space converted from a water storage tank.
- 04 The Circumvent Garden also provides new sites for community farming.



04



01

People Power

Involving residents in urban planning has had a stabilising effect on Medellín. As the law in Colombia doesn't allow mayors to stand for re-election, the city has had seven mayors and several changes of government in two decades. Despite the political changes, the city's long-term plans, developed through participatory planning, have not been disrupted.

Current mayor Federico Gutierrez said, "Medellín does not start over every four years [the electoral cycle], we maintain the projects and programmes that work well and improve whatever is needed. Our commitment to civic culture and culture of legality will be our flagship. All of us must contribute, so our motto is 'Medellín Counts on You.'"

Mr Jorge Perez Jaramillo, Director of Planning during Mr Gavira's term, shared that the mayor attended more than 240 public meetings, involving thousands of residents, in the first six months of his term, to discuss his 12-year plan. Subsequent mayors cannot change these long-term plans without proper explanation to the populace. "If a mayor wants to stop [some plans] ... the community will ask why," he said.

The city also allocates 5% of its budget for communities to define priorities in their neighbourhoods. Known as "participatory budgeting", this practice has funded small projects such as bridges, community halls, and even microloans. Over time, the city and its people have gotten used to the idea that the city does indeed belong to everyone. ●



Shaping Our Future

Keppel embraces sustainability as a guiding principle across our businesses in Offshore & Marine, Property and Infrastructure.

Our 40,000 employees in over 30 countries shape a sustainable future by developing lasting and innovative solutions to meet the world's need for energy, homes, connectivity and a clean environment.

In harnessing our collective resources and competencies to empower lives and nurture communities wherever we are, we lay the foundation for a brighter future - one upon which successive generations will thrive.

Keppel Corporation



CASE STUDY

Singapore | LaunchPad@one-north

Helping Start-ups Take Off

In the early 2000s, start-ups in Singapore faced a dearth of affordable spaces where they could work, exchange ideas and network. The innovative repurposing of an old industrial block gave start-ups the space and the supportive ecosystem they needed for their budding ideas to take off.

The Challenge

With no natural resources to rely on, Singapore has always stressed the importance of building up its human capital. While its education policy proved highly successful in the academic sense, there was worry among policymakers and business leaders that a rigid, structured education was leading to the dearth of entrepreneurs in Singapore.

In 2003, the Economic Review Committee recommended remaking Singapore into a

creative and entrepreneurial nation. This led to the government aggressively promoting entrepreneurship—from reducing regulatory red tape, to promoting pro-enterprise initiatives, as well as grants.

Still, start-ups faced challenges, notably high rental costs. Entrepreneurs also reported a lack of common spaces to gather and share ideas, as well as a supportive ecosystem.





The Ayer Rajah Industrial Estate was built in the 1970s as a series of flatted factories for the light manufacturing industry. It was originally slated for demolition and redevelopment in 2011.





01

The Solution

In the late 2000s, entrepreneurs responded by setting up co-working spaces all over Singapore. These allowed start-ups to defray steep rents while meeting others working on their budding ideas. The idea of co-working began to catch on.

In 2011, the Media Development Authority (MDA), got wind that an old industrial building in the west of Singapore was slated for demolition. Landlord JTC Corporation (JTC), the lead government agency for Singapore's industrial development, had plans to redevelop the land occupied by Block 71. MDA saw this as an opportunity to experiment: could it create a vibrant enclave of interactive digital media start-ups by offering affordable rent and opportunities to collaborate and receive incubation help? It convinced JTC of its vision and negotiated a master tenancy for three years. It then brought in key partners such as investor SingTel Innov8 and incubator NUS Enterprise to run the hub, which became simply known as "Block 71".

JTC readily agreed to the repurposing of Block 71, recognising that there was a lack of central locations for start-ups to cluster for knowledge sharing, and to facilitate mentorship and funding. It saw

an opportunity to repurpose an old building and reuse the existing facility to address the demand of the emerging infocomm sector quickly. Without the cost of constructing a new building, JTC was also able to offer more affordable rental to its tenants.

Repurposing works began with the upgrading of basic facilities at Block 71, such as the toilets, carpark and lobby spaces, and the setting up of wireless Internet. Besides the infrastructure, the founding partners also launched a community space, called Plug-in@Blk71. It serves as the nucleus of the community, seeding and aggregating the start-up ecosystem to Block 71. Entrepreneurship support activities such as events, sharing sessions, investor days and hackathons flourished and catalysed the start-up enclave.

The block filled quickly: entrepreneurs were attracted by the affordable rent (closer to industrial flatted factory rates than prime office rates) and the many networking and mentoring opportunities. By 2013, there were some 100 tech start-ups in Block 71, forming a vibrant community that became the talk of the town within the entrepreneurial scene.

01 A barcamp session for peer-learning. Barcamps are run on zero budget with crowdsourced speakers, equipment and even stationery. Anyone can propose a discussion topic—once a minimum vote is reached, a room and time slot will be assigned.

02 Networking sessions organised by NUS Enterprise.

“Without the cost of constructing a new building, JTC was able to offer more affordable rental to its tenants.”





01

Block 71's location was also attractive since it was inside JTC's "one-north", a high-tech business park where research scientists and investors worked. It was also a stone's throw from higher learning institutes that start-ups could tap for talent, expertise, knowledge and resources.

"Having HistoIndex at LaunchPad provides a close radius to our customers and collaborators in Biopolis, Singapore Polytechnic, NUH [National University Hospital] and NUS [National University of Singapore]. The proximity to other start-ups and governmental agencies also allows collaborative ideas to be fostered through the many networking events in LaunchPad," said Joanna Ng, Office Manager of HistoIndex, a start-up that develops optical medical imaging equipment.

With the pilot a success, JTC and SPRING, a public agency charged with helping Singapore enterprises grow, expanded the start-up cluster by building a new Block 73, and refurbishing the existing Block 79. Collectively known as "LaunchPad@one-north", this was officially opened in 2015 and has reached full capacity housing 44 incubators with 560 incubatees and 120 independent start-ups—mostly from the science and engineering, biomedical, electronics, infocomm and media sectors.

To create more "chance encounters" so that tenants could meet and exchange ideas, JTC



02

built more shared amenities, such as a central meeting room cum event hall, and sports facilities at LaunchPad@one-north.

The landlord also rebuilt an old food centre and approached the Timbre Group, a company that runs music festivals and live music restaurants, to set up a dining venue with a new concept that would add vibrancy to LaunchPad. Dubbed a "gastropark", the foodhall has 35 F&B options that operate out of repurposed shipping containers and caravans. The sprawling space, with its industrial chic décor, bold street art and live music, offers the working population and nearby varsity crowd a place to unwind and network after office hours. In line with its support for start-ups, JTC also created two incubator units at the gastropark for first-time chefs or F&B entrepreneurs. The aim was to let them learn the tricks of the trade alongside the F&B veterans.

SPRING roped in the Action Community for Entrepreneurship (ACE), a not-for-profit incubator, to build the LaunchPad community by organising social and entrepreneurship events and encouraging members to participate. ACE also has a Welcome Centre at Block 79, where it provides a one-stop-shop service for new entrepreneurs to help them get their ideas off the ground.

01 & 02 There is a huge range of F&B options at the LaunchPad's foodhall that caters to different tastes, from affordable hawker fare to restaurant brands.

03 Prime Minister Lee Hsien Loong at a dialogue session with Singaporean tech professionals at Blk71SF, in San Francisco.


04 Artist's impression of the expanded LaunchPad@one-north. The future phases will add 12,000 square metres to the start-up cluster.



03

The Outcome

The success of Block 71 led NUS Enterprise, Singtel Innov8 and Infocomm Investments (a wholly owned investment arm of the Infocomm Development Authority) to replicate a similar entrepreneurship centre in San Francisco, called Block71SF. Opened in 2015, Block71SF aims to help Singapore start-ups break into the Silicon Valley tech start-up ecosystem. The co-working spaces—open to Singapore, US and Southeast Asian start-ups—and tech events like pitching sessions and hackathons, encourage typically isolated entrepreneurs to network, collaborate and inspire one another.

Back in Singapore, JTC is growing LaunchPad@one-north even more: it's building three new blocks, 75, 77 and 81, that will be able to house 250 more start-ups by this year. JTC, in support of start-up growth in Singapore, is bringing the LaunchPad concept to the Jurong Innovation District by March 2017. The Innovation District—envisioned to be the industrial park of the future—is located next to the Nanyang Technological University (NTU), so LaunchPad start-ups will have access to research experts and academia from NTU. 



04



CASE STUDY

New York City | Brooklyn Navy Yard

Reviving Good Industrial Jobs

Post-war deindustrialisation led to rapid hollowing out and the loss of good manufacturing jobs in the Big Apple. To bring back middle-class industrial jobs, the city converted a decommissioned navy shipyard into an industrial park and has successfully created a thriving ecosystem of creative and manufacturing businesses.

The Challenge

Across many cities in the United States, post-World War II changes in the structure of international economy and global division of labour shifted the urban economy from production to services. Space-intensive manufacturing businesses were often pushed out of global cities.

Likewise, New York City experienced deindustrialisation as large manufacturers moved offshore to lower-cost locations. High rents favoured high-end service sectors such as

banking, and low-end service sector jobs such as food service providers.

This was exacerbated by land scarcity and upward rent pressures by competing uses such as office, retail and residential, and urban renewal projects. The result was the emergence of poor neighbourhoods and a lack of good industrial jobs for social mobility. Without stable middle-class industrial jobs, it was difficult for citizens to raise families and retire comfortably.



Lim Hui Ling is an adjunct at the Centre for Liveable Cities.





A neglected building at the Brooklyn Navy Yard.





The Solution

In order to prevent further hollowing out and the loss of good manufacturing jobs, the city created pockets of spaces to encourage industries to stay.

One of them is the Brooklyn Navy Yard, a former naval shipbuilding facility, that was first converted to an industrial park in the 1960s, and modernised again in the 1990s. Today, the city administration, together with private partners, continues to invest millions to convert warehouses and docks into highly sought-after workspace so as to attract new companies and generate thousands more good jobs.

The Yard is a unique space as it is owned by the city. This prevents ad hoc conversions by private landowners. In addition, successive city mayors have been very consistent in creating a safe haven for industry in the Yard and have mandated the non-profit Brooklyn Navy Yard Development Corporation (BNYDC) to help small industries grow.

The BNYDC charges market rent, but as it is city-owned, leases are property tax-free, and there are no surcharges, e.g. for maintenance of communal amenities, so the effective rent can be up to 25% more affordable than for similar spaces elsewhere.

- 01 Some key developments in the Brooklyn Navy Yard that highlight the physical size and investments of each development, and the number of jobs each creates.
- 02 Mandatory hiring from surrounding zipcodes enables employees to walk to work at the Brooklyn Navy Yard.



“Many of the workers are from the public housing project neighbourhoods in the area and walk to work.”

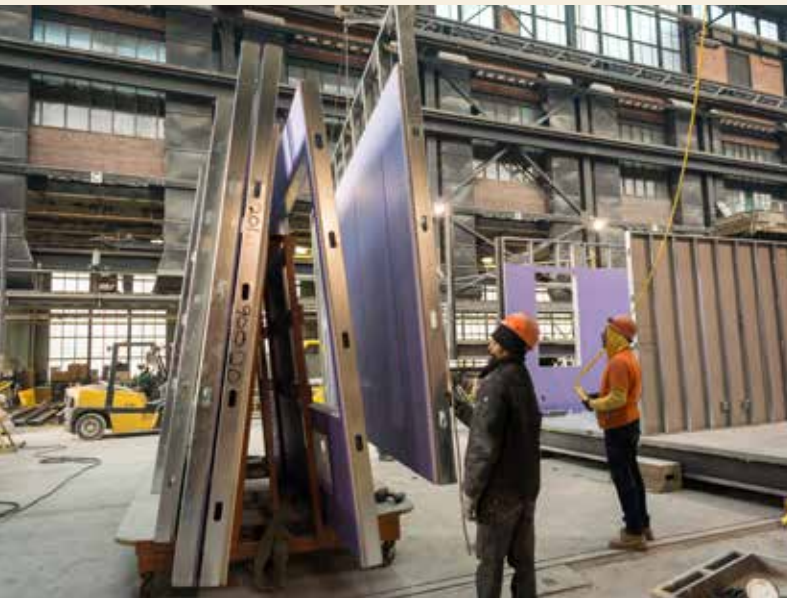




The BNYDC assesses suitable tenants using a potential “jobs per square foot (psf)” metric instead of the ability to pay “rent psf”. The Yard has effectively provided the conditions to support the creative and entrepreneurial activities of small businesses, supporting them in their growth stage, through an assessment of their future job creation potential, and flexible leases, where businesses can start with a small amount of space and then scale up into larger spaces over time, often on-site.

“As a growing landlord, we are creating a dynamic community that is a safe haven where companies can, launch, grow and thrive. But we don’t just create an environment in which jobs can be created, we then work extremely hard to ensure that members of the local community have access to the opportunities we are creating,” said David Ehrenberg, President and CEO of BNYDC.

Businesses in the Yard are mandated to hire a percentage of local residents from the surrounding zipcodes. Many of the workers are from the public housing project neighbourhoods in the area and they walk to work. The on-site Employment Center places over 500 local residents and students into jobs and internships each year. The BNYDC also works closely with educational institutions to ensure that the training prepares students with the skills that are in demand in new manufacturing.



01 David Ehrenberg (left) is reappointed as President and CEO of the Brooklyn Navy Yard Development Corporation by Mayor Bill de Blasio (right) at City Hall on 8 April 2014.

02 Workers manoeuvring a wall in place for modular housing in a factory in the Brooklyn Navy Yard.

03 An illustration of a readapted shipbuilding facility into a network of studios and collaborative work areas for firms and innovators at New Lab, Brooklyn Navy Yard.

04 Handcrafted precision architectural metal fabrication at Ferra Designs.



03

The Outcome

The Yard has seen dramatic success. Today, it is a modern industrial park with 4 million square feet of space, over 300 industrial businesses hiring 7,000 people. It generates an estimated US\$2.35 billion in annual economic output for New York City.

The Yard's tenants come from a mix of creative and manufacturing industries, including design and prototyping, business incubators, advanced manufacturing using proprietary technology, furniture making, media and entertainment and others.

Many businesses are small operations: a mix of traditional manufacturing and contemporary "maker" production, the latter defined by locally-designed and industrial-made, high-value, customised products that cater to New York's sophisticated urban population.

Artisanal food production also lives in the Yard. Spaces like the Yard provide the affordable rent and security of lease for food manufacturers to stay local.

By creating a protected space for industries, the BNYDC has encouraged small companies to expand without fear of fluctuating rents or uncertainty of tenancy. The Brooklyn Navy Yard is a model



04

of an industrial ecosystem that fosters small industrial business growth, through targeted capital funding, a non-profit oriented developer and property manager, and creative partnerships, which can be economically viable in spite of the land scarcity challenges of a high density urban environment. The future of industry in cities remains promising. ○



CASE STUDY

North East Lincolnshire | Public-Private Partnership

A Transformative Relationship

Faced with high unemployment, an ageing workforce and economic doldrums brought about by the decline of its fishing industry, the North East Lincolnshire Council entered into a long-term partnership with a private company to regenerate the borough and improve the lives of its residents.

The Challenge

North East Lincolnshire, a borough of about 160,000 inhabitants in the Yorkshire and the Humber region of Northern England, had long been seen as one of the most economically-challenged areas in the UK.

Since the decline of the once thriving fishing industry in the 1970s, the town faced low growth, an ageing workforce, lower than average education levels and a higher than average proportion of unemployed residents.



(clockwise from top left)

Eamon Drumm is a business development executive in the Decentralized Solutions for Cities and Regions line of activity at ENGIE.

Roman Serdar Mendle manages the Smart Cities Program at ICLEI and heads ICLEI's work on City-Business Collaboration.

Olga Horn is an officer at ICLEI's Smart Cities team.





Derelict buildings at Grimsby Docks, North East Lincolnshire.





01



02

The Solution

North East Lincolnshire Council (NELC), the governing body of the borough, recognised that the area's prospects for economic growth were hindered by a lack of investment capital and the difficulty of retaining labour in the area. As early as 2006, the council discussed the option of outsourcing certain services to supplement their capacities, funds and skills in order to foster economic growth and regenerate the borough. Despite differing political affiliations within the council, the final decision to outsource specific service areas to a private sector partner (including road maintenance, fostering economic growth and promoting regeneration) was made unanimously by all 42 councillors.

After a competitive bidding process, NELC engaged Balfour Beatty WorkPlace Limited, a facilities management firm, for a 10-year "North East Lincolnshire Regeneration Partnership", which was officially inaugurated on 1 July 2010. Balfour Beatty WorkPlace Limited was subsequently acquired by the UK branch of the ENGIE Group, a French-based multinational electrical utility company.

The partnership aimed to improve quality of life and economic conditions for residents, while also changing the council's approach to procurement from a transactional relationship to one that focuses on transformative outcomes.

The innovative component of the partnership was that 30% of the private partner's profits were conditioned on its meeting a number of outcome-based Key Performance Indicators (KPIs) such as attracting 4,200 jobs over the

life of the partnership; managing the delivery of a programme for key regeneration and renewal projects incorporating 3,500 new and improved homes; reducing the number of people killed or seriously injured in traffic accidents by 33% for adults and 50% for children; and attracting £170 million (US\$245 million) of public and private investment in developing projects with adequate training, apprenticeships and work placements for 400 young people.

Services wholly or partially outsourced under the partnership included: attracting outside investment (from private companies or public regional economic development boards, for example); strategic asset management for council-owned real estate including housing, community learning services, repair of highways and transport facilities; parking services; architectural consultancy; urban planning and development management; environmental and flood risk management; building control; and security.

Approximately 300 council staff became employees of ENGIE as part of the contract through a process known as a Transfer of Undertakings (Protection of Employment).

The partnership had its fair share of challenges. With the budget cuts from the national austerity measures introduced in 2010 by the central government, NELC had to negotiate to reduce its financial contribution to the partnership with ENGIE between 2011 and 2013, which led to the contract being extended





03

for two years. This also meant that services had to be delivered for less money and over a longer period of time to recoup costs. During the first two years, the partnership tended to be more narrowly focused on achieving contractual KPIs within the given budget instead of delivering transformative outcomes.

Nonetheless, much effort was taken by both NELC and ENGIE to improve and recalibrate the partnership's governance and management via both formal and informal arrangements that will allow them to focus on urban regeneration, prosperity, health and well-being. These included modifying the number and frequency of strategic partnership board meetings and less formal operational partnership board meetings to bring both NELC and ENGIE onto the same page. ENGIE also engaged in local ward meetings to allow it to better understand the needs of residents and councillors at this sub-municipal level.



04



05

- 01 & 02 New cost-saving and energy-saving LED street lamps in North East Lincolnshire.
- 03 Grimsby Docks to play an important operations and maintenance role for nearby windfarms.
- 04 The former Fabricom ENGIE site is being converted into a multimodal training centre for ports, energy and logistics sectors in Immingham for £7 million (US\$10 million). The works are project managed by ENGIE's professional technical services team in Grimsby.
- 05 There was a 23% increase in tourism from 2009 to 2014, and this has improved confidence in the area and encouraged private sector investment. One example of this is the £2.8 million (US\$4 million) spent to refurbish the Yarborough Hotel at Grimsby, North East Lincolnshire.

“30% of the private partner’s profits were conditioned on its meeting a number of outcome-based Key Performance Indicators such as attracting 4,200 jobs...”





02

The Outcome


Having focused on improving well-being in the North East Lincolnshire community, the partnership successfully fulfilled its contractual KPIs for regeneration as of late 2015, including bringing in £30 million (US\$43 million) of outside investment, creating nearly 3,000 jobs, and consistent responsiveness to day-to-day needs, for example, in the area of road maintenance where 99% of highway damages were repaired within 24 hours.

On top of fulfilling ambitious, outcome-based contractual KPIs, the NELC and ENGIE public-private partnership has been successful and interesting because of their ability to work collaboratively within the framework of the contract and the long term commitment to bring innovation to the borough, including measures such as property rationalisation and energy efficiency.

Specifically, the property rationalisation programme reduced the number of core council-owned office buildings from more than 20 to two main hubs. This helped to reduce office space by 60%, and led to a cut in operational costs of over £1.1 million (US\$1.58 million) per year.

Other key innovations are in the field of energy efficiency. One important project conducted between 2012 and 2013 involved the upgrading of 19,000 street lights from sodium lamps to more cost-effective and energy-saving white LEDs lights. These provided clearer visibility with less energy usage, saving about £540,000 (US\$778,000) per year in energy and maintenance costs, and reducing carbon dioxide emissions up to 35%.

More recently in 2015, the partnership introduced a “flexible basket” strategy for energy procurement, where gas and electricity can be purchased in advance for up to three years, reducing cost and improving access to green energy and promoting energy conservation measures to reduce the borough’s carbon footprint.

Grimsby Docks, which was once full of fishing vessels, is now—as a result of regeneration and investment—full of operation and maintenance vessels to service the now growing renewable energy generation industry in the Humber Estuary. 

01 Grimsby Docks is a major car import gateway and serves the offshore wind energy industry.

02 ENGIE and North East Lincolnshire Council were the winners of both the public sector category and the overall award for the most impressive finalist in the Premises and Facilities Management awards in 2014.



ILLUSTRATION

The Future of Us Exhibition

Coming Together to Dream

Singapore launched The Future of Us exhibition from December 2015 to March 2016 to present visions of the city's future. In this essay, the exhibition's Creative Director **Gene Tan** and Deputy Director **Wan Wee Pin** illustrate how their innovative presentation of urban plans encouraged citizen ownership of the future.

In 2015, Singapore marked 50 years of independence with a year-long series of celebrations. The Future of Us exhibition was the capstone event that aimed to present future visions and plans of Singapore in everyday situations. Matching visions to plans has always been a universal problem for urban governments. According to an ancient proverb, "a vision without a plan is just a dream, and a plan without a vision is just drudgery; but a vision with a plan can change the world". In many cities, individual agencies and organisations present unilateral visions of the future to the public. This results in a fragmented vision of the future for the citizen. To circumvent this problem, the

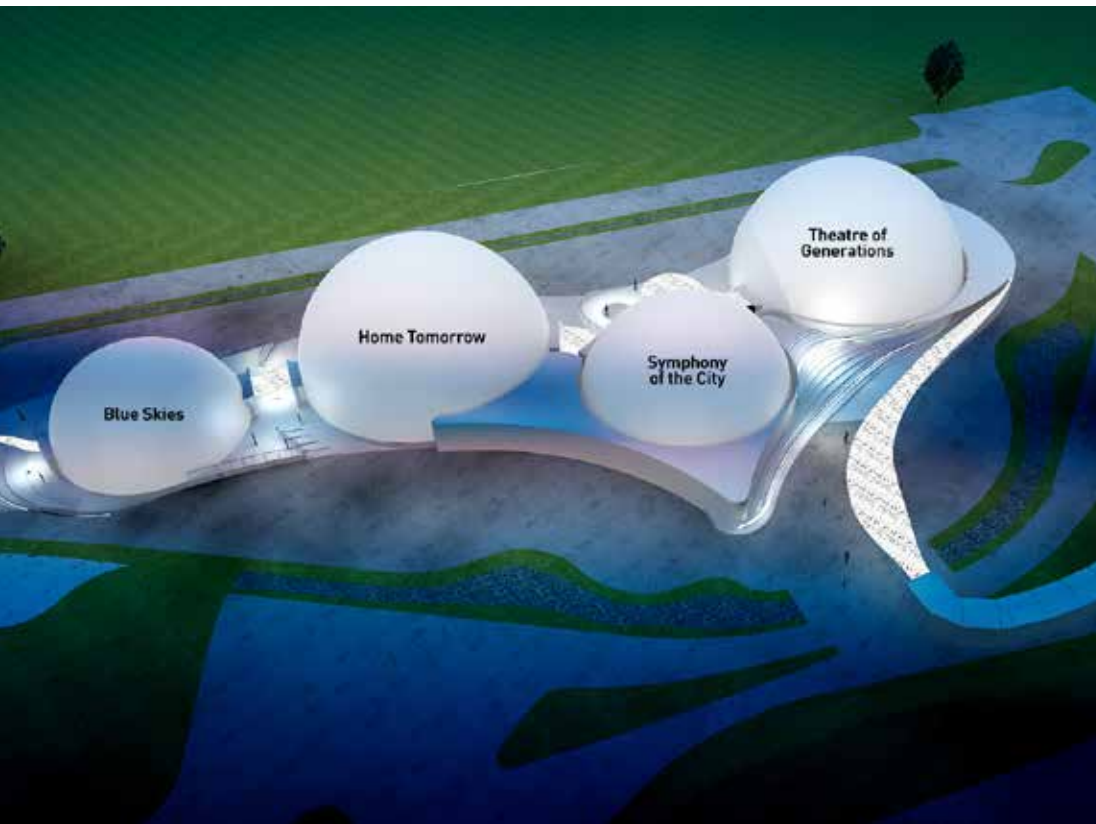
Future of Us team consolidated the future visions of more than 140 public and private agencies.

The team also reviewed 15,000 ideas from the public, from which we identified four key areas of concerns for the future: sustainability of the environment; transportation; caring for the community; and the desire to create an inclusive society. The team combined the visions of the future and public concern into a core narrative. Four protagonists were created for visitors to relate to the challenges of the future, as well as, possible future solutions through urban innovations.



(Left) **Gene Tan** was the Creative Director of The Future of Us exhibition.

(Right) **Wan Wee Pin** was Deputy Director of The Future of Us exhibition project team.



01

The Future of Us team decided at the outset to break through the traditional exhibition format and selected Marina Boulevard, a garden, as the site for the exhibition. Unlike a building with pillars and walls, a garden location eliminated the spatial limitations for the exhibition. This made it possible to create an unbroken space that represented a seamless narrative.



02

The space outside the exhibition was converted into an inclusive play area.



The Four Protagonists of The Future of Us



Ravina is a 38-year-old horticulturist, whose ambition is to grow more plants in the city. Ravina envisions a “sky farm” city. In her vision, green urban solutions, such as the hydraulic farm, produce vegetables for consumption using minimal resources. This results in a city with low carbon outputs. Ravina’s dream of a sky farm city addresses the increasing interest amongst Singaporeans on environmental issues—in particular, we are addressing future urban farming possibilities for the “grow-your-own-food” movement.



yixin is a 30-year-old designer, whose ambition is to design universally accessible spaces, products and environments. She envisions “multi-generation play spaces” in the city. In her vision, design has enabled peoples of all ages and abilities to work, live and play together, without barriers. Yixin’s dream reflects the increasing desire for inclusive designs and architecture amongst Singaporeans to accommodate people of all abilities. We strive to portray urban design possibilities for a better designed future.



faizal is a 22-year-old entrepreneur. His ambition is to allow city dwellers to share rides, so as to reduce road congestions and air pollution. Faizal aims to create a transport-accessible city, where people seek to have access to, rather than ownership of, vehicles. Faizal’s dream reflects the growing concerns that many Singaporeans have towards transport and mobility issues. We hope to present the various transport innovations for a more mobile urban future.



Joseph is a 45-year-old social worker. His ambition is to create a strong network of social support. Joseph’s vision is to create a caring society. In his vision, a strong support network enables swift response to accidents and medical emergencies, and gives people of all abilities opportunities to give and receive help. Joseph’s dream highlights the increasing demand for caregivers and community solutions in the face of an ageing population. We wish to portray a strong volunteer network through community innovations to address these needs.

A Walk-Through of The Future of Us

Visitors to the exhibition experienced four domes sequentially: the Theatre of Generations; Symphony of the City; Home Tomorrow; and Blue Skies.

At the Theatre of Generations, they watched a short film that began in 1965 with the hopes and dreams of the first generation of Singaporeans. The scene then shifted to 2030, where the aspirations of the citizens reflected those of their forebearers.

In the second dome, the Symphony of the City, a table presented different levels of the city, from underground structures to high-rise buildings. A wraparound multimedia screen expressed the different layers and

highlighted future urban plans such as the Changi Airport Project Jewel, Biophilic City Development, Future Tuas port, Rail Corridor and Greater Southern Waterfront project.

At the third dome, Home Tomorrow visitors found a floating city in the clouds, where urban innovations were embedded into the everyday lives of future citizens.

The team recognised the importance for each visitor to take ownership of the narrative, hence in the Blue Skies dome, visitors could submit their aspirations and wishes through a “wishing well” installation that beamed their responses to the top of the dome.



03

The Theatre of Generations featured a 360-degree short film that connected the hopes and dreams between generations of Singaporeans. The film used a time-lapse approach to fast-forward from 1965 to 2030 to portray the similarities in the hopes and dreams of both generations, and how the older generation had inspired their grandchildren—our protagonists.



04

In the Symphony of the City, a 270-degree wraparound multimedia screen depicted the urban future of Singapore city by showcasing the different levels of the city from underground structures to high-rise buildings. The designs included water taxis, vertical farms, a floating hawker centre and an underground Science City.



05

Home Tomorrow showed the collective vision of over 100 private, public and people organisations. The installation depicted scenes of urban living in a future Singapore—showcasing healthcare, technology, learning, sustainable living and agriculture, both as ecosystems and in their day-to-day functions. It also drew on more than 15,000 public contributions, including the concept of the floating public housing.

The creation of a coherent narrative enabled another layer of interactivity, which was to discuss the exhibited vision of the future. The discussions took place through the SGfuture Conversations, a series of public engagement sessions organised by government ministries and statutory boards. These conversations provided Singaporeans with a platform to share their ideas as well as commit to actions and plans to bring about tangible changes. More than 20 such sessions took place, and over 1,000 activists, experts and members of the public participated. The conversations bridged the intangible future with the concrete considerations of the present day.

The exhibition's innovative approach brought citizens closer towards urban planning and increased transparency in the policy process. We believe when citizens can envision the future, they are able to take ownership of it. ●

“ There are endless possibilities ahead. I would like a kind and caring society and I will volunteer in my free time to achieve that. ”

Shu Wei, 33, participant

“ To help the plants live. I will make sure nobody will cut trees. ”

Anvika, 6, participant





06

The Blue Skies dome was a giant wishing well that enabled visitors to pen down their hopes and dreams for Singapore. After they had done so, their hopes and dreams were projected to the top of the dome to form word clouds. A total of 479,963 submissions were collected.



07

Various organisations and interest groups discussed urban renewal in Singapore during the SGfuture Conversations.



YOUNG LEADER



Karen Lee Bar-Sinai

Defusing Conflict with Design

Karen Lee Bar-Sinai is the co-founder and Design Director at SAYA/Design for Change, an architectural practice based in Israel. She specialises in “Resolution Planning”, which is the use of architectural and design tools in aid of conflict resolution processes. This is a missing aspect in the Israeli–Palestinian territorial disputes, which Karen is fighting to fill.



The World Cities Summit Young Leaders is a select group of change-makers from diverse sectors who shape the global urban agenda at the annual World Cities Summit Young Leaders Symposium.

Karen Lee Bar-Sinai on...

🗨️ Your biggest takeaway from your advocacy for the use of design for conflict resolution in Israel

Urban design can be used as a strategic tool in envisioning and shaping conflict resolution processes. A few years ago, *The New York Times* (“The Plan for Peace that Still Could Be”, 7 February 2011) reported that the 2008 Annapolis negotiations included visions and concepts for the future Jerusalem. The set of plans mentioned were produced by SAYA/Design for Change. These drawings showed how an urban border could be situated in Jerusalem: appearing familiar, rather than intimidating; providing connections as well as separation; enabling security as well as permeability; and establishing hitherto inexistent bridges between the two sides. The article also reported that these designs served the two leaders in their direct talks. A leader-to-leader meeting during negotiations is very rare. When they occur, they are of pure strategic nature. They outline principles, broad strokes, leaving the details to be further developed by the negotiation teams. To me, the presence of an architectural concept in such a key meeting was noteworthy. It showed that design is not merely complementary to peace processes, but can become substantial in them. Design can go beyond the shaping of the built environment—it can also inform and inspire decision-making on territorial-political issues.

🗨️ An example of an innovation that inspires you

I have always been inspired by the leaders of the Modern Movement in architecture. Practitioners such as Alison and Peter Smithson, Aldo Van Eyck, and Le Corbusier, as well as new movements such as Team 10 have expanded the boundaries of the architectural profession. Architecture is no longer only the practice of designing the built environment but a way to influence society and shape a new future for it.

🗨️ The most exciting thing that you are working on now

We are now about to launch a large and interactive database of the Israeli–Palestinian peace process which we have been developing

for the Economic Cooperation Foundation in Tel Aviv. It will feature historical terms and maps pertaining to the conflict and its potential resolution, and allow anyone—with little or deep knowledge—to learn how peace can become possible. This project represents how we have expanded our practice: from envisioning peace to helping to democratise spatial–political issues by making them easily accessible and understandable to everyone.

🗨️ A typical day in your shoes

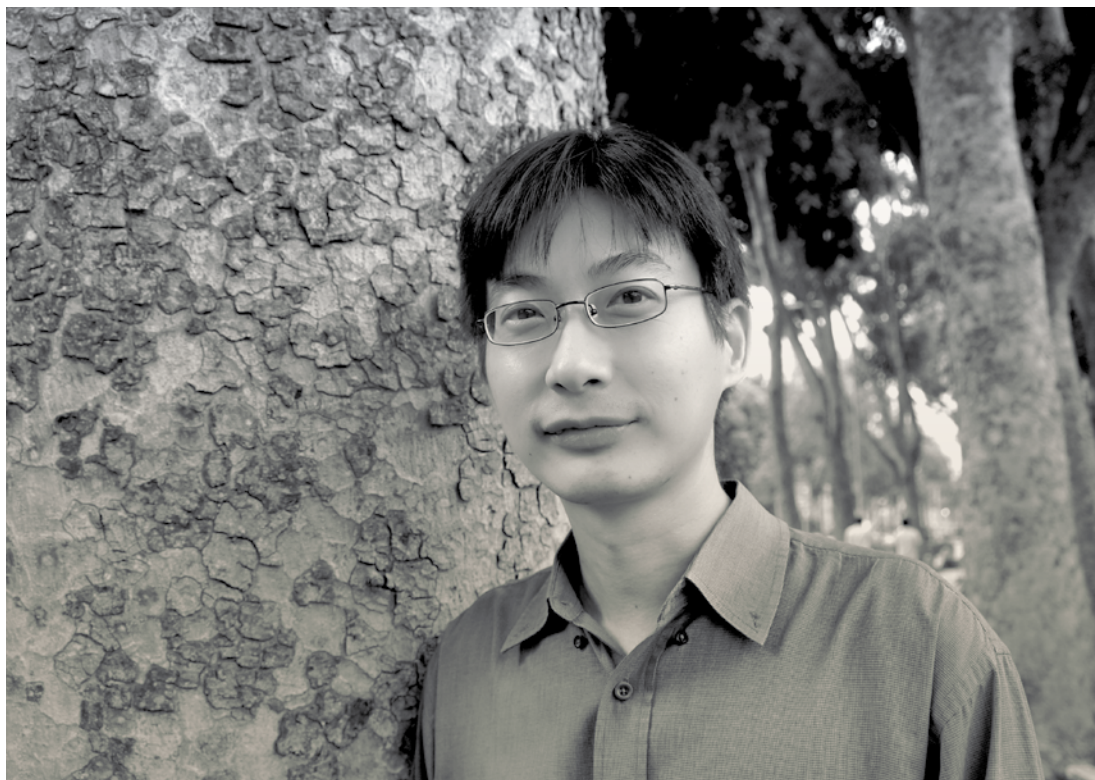
The biggest challenge I face every day is the increasing violence, growing extremism, and the lack of political leadership. What I do is to remind myself that change is not only possible, but also within reach. That vision won’t be found in the harsh reality surrounding us; it has to be dreamed up in the minds and hearts of those who won’t accept it. It is our responsibility to get it delivered and spoken out to the world. In essence, this is what architects do—they use their skills to portray a better reality that could take form in space. We have a duty not to limit our visions to the challenges that come to our doorsteps, but also to respond to spatial challenges that surround us, and design for change.

🗨️ Your ideal city

Jerusalem’s Old City is a paradoxical notion. It is the heart of the conflict in our region where all political and religious interests and sensitivities peak to an unimaginable level. Yet, we have been seeing far less violence within the Old City than around it. In a paradoxical way, there is equilibrium within that one square mile that exceeds anywhere else in the Middle East. What is the source of this equilibrium? I believe it stems from the fact that what unites us as human beings, is far greater than what divides us. This sentiment crosses boundaries and exists in any city. We need to find ways to capture it, transform it into a paradigm, translate it into infrastructure and embody it in our designs. ○



YOUNG LEADER



Eugene Tay

Making Zero the Hero

Eugene Tay is the Executive Director of Zero Waste SG, a non-governmental organisation dedicated to accelerate Singapore's shift towards zero waste and the circular economy. He also runs Green Future Solutions, a sustainability consulting company that helps businesses and organisations address environmental challenges and identify green opportunities.

Eugene Tay on...

🗨️ Your biggest takeaway from running Zero Waste SG

In our current linear economy of “take, make, use and throw”, waste is waste. This is no longer sustainable; we can no longer use more resources to generate more waste. What is the alternative? Imagine a future of zero waste and circular economy, where waste is not waste. Less waste is generated through re-designing, reducing, reusing, sharing, repairing, re-manufacturing, and recycling. Waste generated becomes biological nutrients to be returned safely back to the environment, or becomes technical nutrients to be returned back to the economy. From running Zero Waste SG, I have met individuals and companies that believe in the same future and are willing to work together to make it happen.

🗨️ An example of an innovation that inspires you

I’m inspired by new business models in the circular economy—product service systems, product life extension, and sharing platforms. Companies have to learn to adopt innovative business models to generate revenue while satisfying customers and reducing the wastage of resources. Examples of innovative business models include providing lighting as a service instead of selling lamps; subscription payment for washing cycles rather than buying washing machines; modular smartphones that can be upgraded and extended with more functions; and business-to-business sharing of underutilised assets.

🗨️ The most exciting thing that you are working on now

This year, I’m focused on reducing food waste and working on these programmes: provide more outreach and awareness talks

for businesses and schools; organise a competition with culinary schools to engage students in developing recipes for leftovers; interview food companies and develop best practices and case studies on food waste reduction and recycling; and develop food waste matching apps so that those with excess food can easily find others to give away or sell at a discount. I’m also planning to produce a brief report of the circular economy and opportunities for Singapore so that we can use it to seek out interested (and the right) parties who wish to work together on developing a more detailed city scan for Singapore and study the actual potential of the circular economy in Singapore and the material flows.

🗨️ A typical day in your shoes

A typical day for me at Zero Waste SG would be working together with volunteers on planning and implementing the various programmes, attending meetings and giving talks, or liaising with potential partners and government agencies. In addition, I manage a sustainability consultancy, Green Future Solutions, so half my time is involved in providing services to clients, such as conducting environmental audits, providing talks and training workshops, or researching and developing content and reports.

🗨️ Your ideal city

Amsterdam would be an ideal city as it is striving to lead as a sharing city and a circular hotspot. It is also car-lite with a strong cycling culture and good tram system. The cooperative culture and lack of hierarchy among the public, private and people sectors, and the willingness to be innovative and take risks, makes it an ideal city to lead in sustainability. ○



YOUNG LEADER



Bulelwa Makalima-Ngewana

Creating Spaces to be Proud of

Bulelwa Makalima-Ngewana, CEO of the Cape Town Partnership, is a town planner with vast experience in managing and coordinating public-private partnerships. She has spent 12 years in senior positions at the Cape Town Partnership, including two years at the helm, working towards making Cape Town's Central City a liveable, creative and vibrant place.

Bulelwa Makalima-Ngewana on...

🗨 Your biggest takeaway from your 12 years at the Cape Town Partnership

The Cape Town Partnership was formed in 1999 as a public-private partnership, so collaboration is part of our DNA. Sixteen years later, this ethos remains integral to our success. I've learned the value of talking to people and asking them their opinions. I engage with everyone—from students to CEOs—and attempt to really listen to what is being said even if it is not always palatable to hear, and also to listen to what is not said. I've learned the importance of having global as well as local partners, especially in the World Cities Summit Young Leaders programme. The networking experience is simply invaluable.

🗨 An example of an innovation that inspires you

Our very own Creative Cape Town mobile app inspires me. Creative Cape Town, which strives to realise the potential of the creative economy and to ensure that the city continues to evolve as a creative capital and a centre of knowledge and innovation globally, is the longest-running programme of the Cape Town Partnership. Developed in partnership with Domino Digital, the app aims to connect creatives to clients and to each other, while helping to broaden public access to creative events and industries. Registered users can showcase their work by uploading mini-portfolios. The potential for expanding the geographical reach of this app, and adapting it to other industries and projects, excites and inspires me.

🗨 The most exciting thing that you are working on now

We are in the process of rolling out our Placemaking for Equity campaign. By placemaking, we mean creating places where people want to be—places that are welcoming, comfortable and secure—and that lead to emotionally connecting spaces. Our short-term objectives include the establishment of three new pilot programmes in neighbourhoods with different demographics in the first year of study. The intention is to stimulate economic development and job creation

especially within the informal economy; to bridge divides between different ethnic, racial and socio-economic groups; and to repurpose underutilised space that will result in safer, attractive and more vibrant public spaces. Ultimately, we see this as facilitating active citizenry and enhancing civic pride. A more important goal of this project is to help reverse the apartheid city design and to bridge the social and economic gap between citizens.

🗨 A typical day in your shoes

I can't say that any day is typical. With my invaluable assistant, Mandy, I try to plan ahead as much as possible. That being said, I aim to be flexible and accessible to individuals and organisations working in Cape Town, and in the area of public space. Hence, my diary is pretty packed with meetings. With the support of my executive team, my day moves seamlessly between strategy and operations, leading to an effective implementation of organisational strategy in an innovative yet structured way.

🗨 Your ideal city

Other than Cape Town—which will always be the city closest to my ideal city—San Francisco is one I admire immensely. It's an accepting city, welcoming of all individual and collective identities. As far as I observed when I visited, very little was frowned upon and I loved the uniqueness of each neighbourhood. Still, I love a number of cities, and Singapore is one of them. I especially love the culture and the cuisine, and of course, Singapore's housing programme is the best in the world and a model for so many cities, particularly Cape Town, which has similar issues of division and affordability that Singapore grappled with years ago.

In my opinion, the best thing that Cape Town has to offer is its diversity. Our mistakes and challenges are in your face so there's a sense of wanting to address these challenges. We know them, we live them. Above all, we want to change them, and so build a better city for everyone who calls Cape Town home. **○**



THE KEY TO SUCCESS FOR TOMORROW'S CITIES? LET EVERYONE CONTRIBUTE.

The best way to address the challenges of urbanization is to put people at the heart of the renewal process. But how can cities enable officials, citizens and business people to work together?

Dassault Systèmes' answer is **3DEXPERIENCECity**, a 3D collaborative environment where data from sensors and city systems is federated into a virtual referential that benefits everyone.

For city officials in departments ranging from Utilities and Mobility to Environmental Planning and Health & Social Services, **3DEXPERIENCECity** functions as a 'cockpit' from which they analyze and manage city resources and services. Leveraging the advanced modeling technology of **3DEXPERIENCECity**, they simulate 'what if' scenarios to test concepts and develop optimal solutions for domains such as infrastructure, logistics, disaster management and the environment.

For citizens, **3DEXPERIENCECity** is a community space that serves as a collaborative hub, conversation forum and information portal. Unlike traditional smart city solutions where information remains in silos,

3DEXPERIENCECity is a holistic space that enables citizens and officials to voice opinions, collect data and display information.

For business, **3DEXPERIENCECity** acts as a virtual marketplace where people can offer goods and services. As a dynamic model that continuously updates itself with fresh data and feedback, **3DEXPERIENCECity** gives a city a new outlet to provide services to citizens and businesses.

3DEXPERIENCECity is powered by Dassault Systèmes' **3DEXPERIENCE** platform, the business experience platform that world-leading companies in every industry use to create winning customer experiences. **3DEXPERIENCECity** is experiential, understandable and puts people at the heart of sustainable urban renaissance.

To learn more, visit www.3ds.com.



"3DEXPERIENCECITY IS A 3D COLLABORATIVE ENVIRONMENT THAT FEDERATES ALL CITY DATA FROM SENSORS AND SYSTEMS. OFFICIALS USE IT AS A 'COCKPIT' TO MANAGE AND MONITOR CITY SERVICES AND RESOURCES, AS WELL AS TO MANUALLY SIMULATE 'WHAT IF' SCENARIOS TO OPTIMIZE DOMAINS SUCH AS INFRASTRUCTURE, LOGISTICS AND SECURITY."

*Mercedes Masquedel
Executive Vice President
Chief Strategy Officer
Dassault Systèmes*

 **The 3DEXPERIENCE Company**


About Dassault Systèmes: Dassault Systèmes, the 3DEXPERIENCE Company, provides business and people with virtual solutions to design sustainable innovation. Its world-leading solutions transform the way products are designed, produced and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group today sales to over 230,000 customers of all sizes, in all industries, in more than 140 countries. 3DEXPERIENCE is a registered trademark of Dassault Systèmes or its subsidiaries in the U.S. and/or other countries.

HOW MANY LIGHT BULBS DOES IT TAKE TO CHANGE A CITY?

At one point, 40 percent of streetlights in Detroit didn't work. Citi partnered The Public Lighting Authority of Detroit to help restore the city's lighting system and make it a brighter day.

www.citibank.com.sg/progress





URBANISATION
generates exciting
opportunities and
diverse challenges.

As a resource-scarce city-state, Singapore has developed innovative solutions in urban planning, development and governance. Many emerging cities are keen to learn from these experiences, even as Singapore continues to seek fresh solutions to its own evolving challenges.

Through its research, the Centre for Liveable Cities (CLC) distils knowledge from Singapore's development experiences, and conducts forward-looking research that addresses emerging issues. It also shares practitioner-centric knowledge with city leaders through these other areas: capability development, knowledge platforms and advisory. CLC co-organises the WORLD CITIES SUMMIT and LEE KUAN YEW WORLD CITY PRIZE.

Careers at CLC

You can expect a dynamic career at CLC, bringing together senior policy-makers and experts to address urban challenges.

CLC is a division of the
Ministry of National
Development, Singapore.



Senior Assistant Director/Assistant Director/Manager

You will help bring together senior policymakers and experts to address the contemporary challenges facing cities, and make CLC a repository of knowledge and best practices among cities globally.

In particular, you will be required to conduct research, produce content for publication, run training programmes, and help organise the World Cities Summit and other CLC events.

Senior Assistant Director/Assistant Director/Manager —Geographic Information Systems and Data Analytics

You will help bring together senior policymakers and experts to address the contemporary challenges facing cities, and to make CLC a repository of knowledge and best practices among cities globally.

In particular, you will be required to conduct research by leveraging on geospatial and data analytic tools, run training programmes, and help organise the World Cities Summit and other CLC events.

For more details, go to: www.careers.gov.sg