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URBAN SOLUTIONS

SPECIAL FOCUS

Active Mobility

A biannual magazine
published by CENTRE for LiveableCities SINGAPORE

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.

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Contents

URBAN SOLUTIONS

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Set up in 2008 by Singapore's Ministry of National Development (MND) and the Ministry of Environment and Water Resources, the Centre for Liveable Cities (CLC) has as its mission "to distil, create and share knowledge on liveable and sustainable cities". CLC's work spans three main areas – Research, Capability Development and Promotion. 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

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URBAN SOLUTIONS welcomes feedback from readers.

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Arup, reproduced with permission: 9
Building and Construction Authority: 36, 38, 39 (above), 40 (above), 41 (below left)
CapitaLand Singapore: 40 (middle and below)
Centre for Liveable Cities / Urban Land Institute: 58
Chenzw – http://commons.wikimedia.org/wiki/File:BCA_Sensory_Garden.jpg: 39 (below), *CC by-SA 3.0*
Choo Yut Shing - https://www.flickr.com/photos/25802865@N08/15070210125: 70 (below), *CC by-NC-SA 2.0*
Chris Isett – http://commons.wikimedia.org/wiki/File:Scooter_mayhem,_Taipei.jpg: 42-43, *CC by-SA 2.0; edited*
City of Melbourne: 22-23
City of Melbourne / David Simmonds: 24, 25, 26, 27 (below)
Construction Transportation Authority 건설교통국 – http://www.daegu.go.kr/Traffic/Default.aspx?cid=18:2&classNo=0&no=11&rNo=11&page=1&list=0&infoID=129: 32-33
David Reid – https://www.flickr.com/photos/davidonformosa/3351161680: 44 (below), *CC by-SA 2.0*
Courtesy of DISSING+WEITLING Architecture –http://www.archdaily.com/522669/bicyclesnake-dissing-weitling-architecture/: 82
Duncan Harris – https://www.flickr.com/photos/duncanh1/8502978461/in/photostream/: 10 (below), *CC by 2.0*
Francis Chu: 68 (below)
Francisco Anzola – http://commons.wikimedia.org/wiki/File:Cheonggyecheon_stream_(1510072356).jpg: 34-35, *CC by 2.0; edited*
Gehl Architects: 53-55, 57, 59, 63 (below), 64, 66 (left), 67 (right), 68 (above)
Gehl Architects / Henningson: 59
gibbyli – https://www.flickr.com/photos/gibbyli/14102420127/in/photostream/: 41 (above left), *CC by-NC-SA 2.0*
Greater London Authority / James O Jenkins: 7
Heinen – http://subsite.kk.dk/sitecore/content/Subsites/CityOfCopenhagen/SubsiteFrontpage/Press/Photos.aspx: 84-85
Henry Kim 김형래 – https://www.flickr.com/photos/marketian/1955724832: 29, *CC by-NC-SA 2.0; edited*
Ian Fisher – https://www.flickr.com/photos/ian_yvr/14156656185: 80, *CC by-NC-SA 2.0*
jacksim.asia: 4-5, 10 (above), 11, 70 (above), 71-77
Jacob Christensen – https://www.flickr.com/photos/jacobchristensen/8924750399/: 52-53, *CC by-NC-SA 2.0*
jenniferc39 – https://www.flickr.com/photos/8165582@N07/3182145234/in/photostream/: 47 (above), *CC by-NC-ND 2.0*
Jonas Smith – https://www.flickr.com/photos/jonassmith/15946718777: 81, *CC by-NC 2.0; edited*
Joonho Ko: 33-34
K_HAN_K – https://www.flickr.com/photos/aressen2000/15406418464/in/photostream/: 45 (above right), *CC by-NC-ND 2.0; edited*
Mik Hartwell – https://www.flickr.com/photos/mikhartwell/5026168067/: 83, *CC by-SA 2.0; edited*
NYC Department of Transportation: 14-16, 18
Olugbenro Photography: 12-13
Photos By 夏天 – https://www.flickr.com/photos/tdp_photos/9480693160/in/set-7215763453 0352762: 44 (above), *CC by-ND 2.0; edited*
Remy Guo: 46 (right), 47 (below), 62, 63 (above), 65 (right), 66 (above right), 67 (below left)
Sarah – https://www.flickr.com/photos/semisara/3348761647: 46 (left), *CC by-NC-ND 2.0; edited*
scsmith4 – https://www.flickr.com/photos/minx2012/6189623440: 65 (left), *CC BY-NC-ND 2.0; edited*
Sengkang – http://commons.wikimedia.org/wiki/File:Toa_Payoh_Town_Centre_4,_Aug_06.JPG: 69, *CC by 2.0; edited*
Taipei City Government: 45
Thomas Rousing – https://www.flickr.com/photos/thomasrousing/14354730885: 78-79, *CC by 2.0*
Ursula Bach: 56
Wally Gobetz – https://www.flickr.com/photos/wallyg/5784745262/: 66 (below), *CC by-NC-ND 2.0*

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From the Executive Director

Our cities are progressing away from automobile-centred transport systems and towards greener, more active modes of transportation such as walking and cycling. Coined "Active Mobility" by the Centre for Liveable Cities (CLC), this forms the special focus of this issue's **URBAN SOLUTIONS**.

While the term is new, the vision is not. Many cities have started on this road towards active mobility. In *Interview*, Boris Johnson, Mayor of London, and Janette Sadik-Khan, former Transportation Commissioner of New York City, reveal how cycling enhances liveability in large, developed cities. *City Focus* also highlights how Copenhagen, the European Green Capital of 2014, uses cycling as a way to become carbon-neutral by 2025. Elsewhere, Melbourne, Seoul and Taipei have redirected their policies to incorporate walking and cycling, which are shared in their respective *Case Study* articles.

We also introduce a new section – *Young Leader* – profiling prominent young leaders who shape the global urban agenda at the annual World Cities Summit Young Leaders Symposium. In our inaugural section, Ridwan Kamil and Stephen Yarwood represent the new generation of urban leaders who have identified active mobility as a strategy to target urban challenges.

Our photo essay *Illustration* demonstrates how Singapore is becoming more walkable, and the new roundtable format in our *Opinion* section gathers experts to discuss how the city-state could become the world's first tropical cycling city. Our Singapore *Case Study* also showcases efforts to make our built environment accessible to all.

How exactly does active mobility contribute to better cities? Professor Jan Gehl, esteemed Danish architect and recent Visiting Fellow to the CLC, and Birgitte Svarre of Gehl Architects help to connect the dots in *Essay*. CLC researchers also fill in on the benefits and success factors in becoming an actively mobile city in two *Illustration* pieces, as well as show how urban design can encourage people to leave their cars at home in another *Essay*. These insights were a result of CLC's joint study with the Urban Land Institute on "Creating Healthy Places through Active Mobility".

This issue of **URBAN SOLUTIONS** is rich with experiences of cities which are embracing the move away from cars, and their stellar results. I hope reading this is as enlightening and inspiring as it was for us to put together.

Khoo Teng Chye
Executive Director
Centre for Liveable Cities

Boris Johnson

SUPER-HIGHWAYS TO SUSTAINABILITY

On 28 November 2014, visiting Mayor of London, **Boris Johnson**, shared his insights into a new 2050 plan for the English capital with Koh Buck Song of the Centre for Liveable Cities. Sustaining "the most liveable city on Earth" covers everything from cultural attractions to crime prevention, as well as building infrastructure for residents, especially women, to feel safe and confident commuting across vast networks of bicycle super-highways.

Our strategy... is working. We had more tourists last year than any other city... 16.9 million tourists.

London is, quite clearly, still flourishing and growing as a city. With all this growth, it must pose some challenges on infrastructure, including for transport. How do you go about responding to these challenges?

We certainly have to plan. We have just set out a 2020 vision. We are now doing a 2050 infrastructure plan, which sets out all the things that London will need in 2050: housing, transport, sanitation, electricity, and so on. There are all these things that we need to do, and it is a very big operation, a very big plan. It will cost £1.3 trillion for the whole thing. That is a lot of money that we have to put in, and we are trying to build a consensus around all the things we need to do: all the tunnels, all the bridges, all of it.

What is the overall approach or the strategy to keep London liveable, attractive and competitive as a city?

Our strategy is to keep London the most liveable city on Earth, to make it a place people want to come and live in, invest in, have fun, and it is working. We had more tourists last year than any other city on Earth; we had 16.9 million tourists. We had more overseas visitors than New York, more than Paris. We used to have families move out of London, but now we have large numbers of families who stay in the city because the schools are getting better. So, there has been a big change. It is not like when I was growing up in the 1970s, it was very different. Some aspects are much better now.

Mayor Johnson at his interview with **URBAN SOLUTIONS**.

In a democracy... you have to be decisive... just do it, because everybody is going to object to something.

So what are the key strengths of this strategy for promoting, and developing, the liveability of the city?

I think air quality is important, the distance between your place of work and your home – your commute and the cost of your commute; dealing with crime is very important, green spaces – parks – that matters a great deal, and things like traffic – making sure that you keep the traffic flowing smoothly. There has to be great cultural attractions. London has nearly 400 'live' music venues, so it has a lot going for it.

Amidst all that, how important is promoting cycling?

Cycling is very important. I would not say cycling is the number one thing, but it is very important. We have a huge cycling agenda. We are putting about a billion pounds into some of the roundabouts and junctions to make them safer. And putting in big cycle super-highways as well.

What is it that cycling adds, or contributes, to liveability?

I think cycling is a wonderful way to get around. You feel better, you arrive at the office in a good mood. You have ideas, your endorphins are going through your body, so you are charged up, and you are optimistic. You get fitter a bit. I myself go so slowly that I don't really get fitter. But that is what you should get – fitter. And then, you take people out of cars. So, instead of people being stuck in a car, they are on bikes. You get a car off the road, you relieve the pressure on public transport, it makes a lot of sense. And cycling has massively increased in London in the last few years – something like 150% or 200%.

Of course, infrastructure is a big part of all that, including your cycle super-highways. What are some of the learning points from having to put in place all this infrastructure?

Be brave. Recognise that in a democracy, you will incur a lot of anger and you have to be decisive. You have to work out what the best plan is, and then, just do it, because everybody is going to object to something.

01 Mayor Johnson cycles on a London cycle super-highway.

It is all about making it safer and making people feel more confident on bicycles ...Cycling is for everybody, including people in suits.

What has been your experience of addressing and overcoming the objections?

When I say you've got to just do it, I must qualify that: if you can improve the design, you should. There are projects where we are trying to be as subtle and flexible as we can. So when I say, "be brave", I don't mean "be stupid." Be rational, but when you have decided what you are going to do, then put it in. So at the moment, we are building the biggest, continuous cycleway anywhere in Europe – putting in a big East-West cycle super-highway – and there are a lot of objections. But we are going to do it. We are going to find a good way through.

First of all, you have got to see whether the objection is valid or not. Then, if it is not valid, you just make the points about how the traffic will flow, about the economic benefits, the environmental benefits of the cycle super-highway, and you just get on and you do it.

The other important aspect is increasing the takeup and usage of cycling, getting people to buy into it, and then embracing it as a way of moving around. How have you gone about this part of it, getting the buy-in and encouraging usage?

I think you have just got to make it safer. It is all about making it safer and making people feel more confident on bicycles. We particularly want to have more female cyclists, because they tend to be less brave – or less confident, I should say. They tend to hang back a bit. We want to see them feeling that the road is for them as well, so we are trying to ensure that is the case. It is about trying to get this message through: cycling is not just for people dressed in Lycra, and with dreadlocks and stuff. Cycling is for everybody, including people in suits – fat people in suits like me.

In your promotion of cycling, what are the next new features coming up?

We are trying all sorts of things. We are trying some electric bicycles in one part of London, and we are intensifying the cycle hire network. We are putting in more docking stations before we can make the next big expansion. We want to get it really working well in the centre of town and the quiet ways through the centre of London – the network of little paths.

The bikes on hire already bear your name; they are nicknamed the "Boris bikes". So, it looks like this will clearly be one of the highlights of your legacy as a Mayor. How do you feel about leaving this legacy behind?

I'm very proud to have any part in the cycle hire scheme. It seems to be working well.

01

01 Mayor Johnson poses with some bicycles from the Barclays Cycle Hire.

02 The Garden Bridge across the Thames will be one of the next big projects that London will be embarking on.

In the UK, you already have a cycling culture to begin with – in your other towns, and in the countryside – so you already have that advantage. What advice would you have for other cities where there is less of this cycling culture?

I think it can be difficult. For example, I notice that in Singapore, you have a lot of cars and you don't have many cycle lanes. I think the state – if it believes in cycling – has to get behind it. And it can actually be very easy. You have to paint some cycle lanes on the roads, or something like that, because people need to feel that there is an area where they can cycle safely.

The state – if it believes in cycling – has to get behind it...You have to paint some cycle lanes... people need to feel that there is an area where they can cycle safely.

What other new features can we expect to see soon in London?

We are building a wonderful bridge across the river which is going to be a garden bridge, a beautiful bridge just right in the middle of the Thames, with trees and plants, birds and butterflies, and bunny rabbits. It is between Blackfriars Bridge and Waterloo Bridge, right in the middle of the city. It will dramatically galvanise the area on either side of the river, and we are starting it next year.

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● What other lessons, tips or takeaways do you think London can offer to Singapore, and to other cities, on enhancing liveability?

It would be impertinent for me to try to advise Singapore. You do things that we would not dare to do – like with chewing gum and stuff. It is extraordinary. In London, we have a problem with chewing gum too. It is everywhere, like little blobs on the pavement. Horrible! Blobs like fungus, growing everywhere. There are millions of blobs, from people who try to give up smoking, they blob it out. And you have this system which I support. It sounds fantastic. Well, I can't do that. I don't have the power to compel people to not to chew gum. But that is an interesting idea.

● Aside from mobility, are there other international trends relating to the liveability of cities – such as building smart cities, or enhancing city resilience – that are interesting, or important, to you?

Yes, I believe in smart cities, but I think most people are too impatient. Most people do not have the time or the intellectual energy to spend their lives going around their homes and checking the thermostat, or looking at their apps and working out when is the optimum time to have a shower, and how to make sure all the lights are turned off, or whatever. I think most people want it done for them. The only thing that worries me about the smart city idea is that it presumes that people are smart. People may be smart, but they are very busy. So you've got to make life easy for them.

02

01 Mayor Johnson (right) in animated conversation with CLC Adjunct Researcher, Koh Buck Song, during his interview with **URBAN SOLUTIONS**.

02 The city of London today.

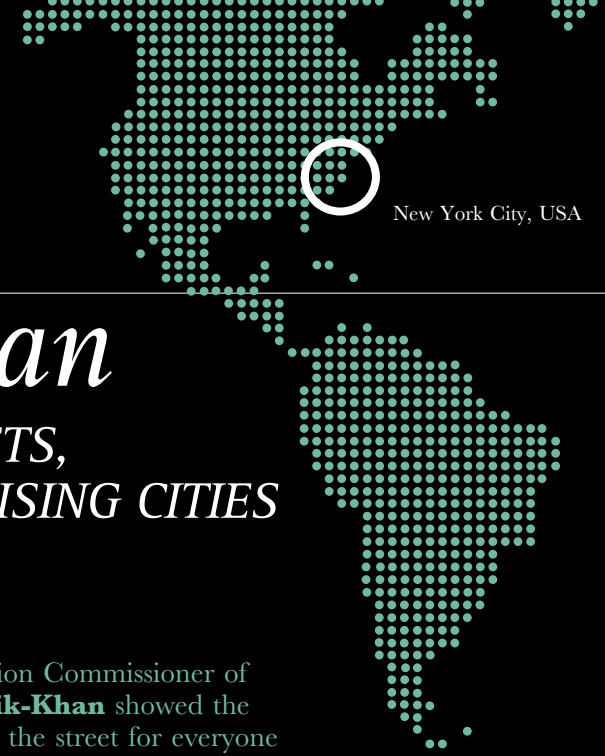
● Are there any other trends that you find interesting, that you might want to try implementing?

Driverless trains on the underground are very good. I like that. We should do that. We should have more automation on our mass transit system.

Listen to the full interview:

https://www.youtube.com/playlist?list=PLGKE0U1p8RxgXyfX77V3pVU0FiLVJBXFl

Janette Sadik-Khan at the plaza on Broadway.



Janette Sadik-Khan

REIMAGINING STREETS, REVITALISING CITIES

During her term as Transportation Commissioner of New York City, **Janette Sadik-Khan** showed the world how providing space on the street for everyone can have a positive impact on all aspects of the city. In this interview with **URBAN SOLUTIONS**, Ms Sadik-Khan shares the intricate link between city and street planning, and how redesigning streets is not as unintuitive as one would think.

You were brought in as Transportation Commissioner to revolutionise New York City's streets, but ended up revitalising the whole city. How do better streets make cities more liveable?

What we saw almost immediately in NYC is that the health of a city's economy and of its citizens are directly linked to the health of its streets. Streets that are difficult to cross, that are unattractive and focused on moving cars, and with no place for cyclists or pedestrians are bad for people and bad for business. So it's no surprise then that when we looked at the performance of streets after we installed common-sense solutions like bike and bus lanes, we saw improvements on every front.

When you make it safer and easier to get around, the benefits to your city don't stop at the curb – you see improvements everywhere you turn.

Injuries and crashes plummeted, even as more people were out on two feet or two wheels. On Ninth Avenue in Manhattan, local retail sales shot up by as much as 49% after we installed the nation's first parking-protected bike lane. When you make it safer and easier to get around, the benefits to your city don't stop at the curb – you see improvements everywhere you turn.

The fact is, our streets work better for everyone when you don't make pedestrians and cyclists ...fight over the scraps not given over to cars.

When referring to the closing of Broadway at Times Square, you once said, "it doesn't need to be a zero-sum game between moving traffic and creating public space." Could you elaborate how so?

If you read the papers, you'd think that there's a finite amount of space on our streets; and pedestrians, cyclists and drivers are doomed to fight it out on the road. But with careful planning and comprehensive public outreach, we showed that you can make your existing streets work better and accommodate the needs of all users of the road. When we closed Broadway to cars in Times Square, taxi speeds in the neighbourhood increased by 17% – despite predictions of permanent gridlock – because the road design made it easier for drivers to navigate and reduced conflicts with pedestrians. When we installed protected bike lanes and dedicated bus lanes on First and Second Avenues in Manhattan, we saw injury crashes drop by nearly 40% and bus speeds increase by 18%. The fact is, our streets work better for everyone when you don't make pedestrians and cyclists – often the majority of road users – fight over the scraps not given over to cars.

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Your street redesign projects frequently transformed road spaces into public spaces. How did you work with Amanda Burden, former Planning Commissioner, to achieve this?

At DOT (Department of Transportation), we were lucky to have a very supportive Mayor who understood the benefits of redesigning our streets for all New Yorkers and provided support from every corner of his administration. He set the tone with PlaNYC, a long-range sustainability plan, which focused on how to make New York City work better while accommodating a million more people who are predicted to live here by 2030. This was a tremendous undertaking that required coordination with the Department of City Planning and every city agency. So as we worked to reengineer our streets to better accommodate more people, we also worked on changes to the zoning code that would require fewer parking spots and allow more and more people to get around the city without having a car. Today, we're seeing movement on this front in cities across the world.

What other obstacles did you encounter during your term as Transportation Commissioner, and how did you overcome it?

In New York, our streets remained unchanged for so long that many people didn't know it was even possible for them to look any different. So we got to work immediately, showing New Yorkers that streets could be welcoming public spaces that served everyone. Often using inexpensive and temporary materials and working closely with neighbourhoods, we reimagined streets across the city, from tourist hubs like Times Square to small, local corridors that were designed only for automobiles. Once people got a taste for better functioning streets and saw what was possible, the support was overwhelming. While there will always be those willing to focus on even the smallest controversy, polls at the end of Mayor Bloomberg's administration showed 73% support for bike share, 72% support for plazas and 64% support for bike lanes. If this had been an election, it would have been a landslide.

01 Ninth Avenue, before the implementation of bicycle and bus lanes.

02 Ninth Avenue today.

03 Traffic conditions on Broadway, before its closure to automobiles.

04 The pedestrian plaza at Times Square was set up with temporary materials, but created a lasting impression.

03

04

How are pilot projects effective in introducing walking and cycling to cities? What advice would you give to other city leaders looking to implement their own pilots?

Nobody wants to be told what's good for their streets and they don't want shiny designs and promises about what something will look like in 5 or 10 years. The best way to convince people of something is to try it. If it works, keep it; if not, you can put it back the way it was. So in Times Square, we lined up local stakeholders and convinced them that this was worth trying. When it succeeded, making front-page news around the world, it sent a message that went well beyond Times Square: it showed you can change streets and see the payoff in real time, sometimes even overnight. When the plazas were immediately filled with thousands of people and retail sales shot up, the chain reaction took off. People from other neighbourhoods saw these changes and they said, "We want that too." By the end, we rarely needed pilots because people had already seen these kinds of street designs being used very successfully elsewhere in the city. They became the new must-have for every neighbourhood.

Active transportation is not some fad that people will grow out of...everyone is a pedestrian at some point in their commute, and that's where our planning focus needs to start.

What is your response to people who think that focusing on low-technology approaches to transport such as walking and cycling is moving away from becoming a world-class city?

The strategy of laying out more roads to accommodate more cars hasn't worked, and we can't double-deck our streets without doubling our problems and destroying the very street life that turns our cities into destinations to begin with. The key is to rethink how we use our streets and find ways to increase their efficiency. Faster bus routes, protected bike lanes and bike share, expanded and improved pedestrian space: these strategies create new choices without billions of dollars in investment and decades of planning, and they've increased New York City's stature around the globe. As cities get bigger and denser, there will always be a need for new infrastructure investment, as cities from Los Angeles to Salt Lake to London to Singapore have demonstrated. But in an era of finite resources and infinite demands on our transportation systems, we need to get smarter about how we use our existing streets. That means making well-planned and efficient changes with the resources at hand, so that you realise the benefits quickly.

How does cycling and walking fit into the future of mobility, where advances to technology in transportation such as Automatic Vehicles might become more prevalent?

Active transportation is not some fad that people will grow out of. Over the last decade in New York, the number of cyclist quadrupled and we've estimated 342,000 daily biking trips, with some 40,000 on our bike share system alone. Meanwhile we've seen pedestrian volumes soar where we've made streets safer and more pleasant for people. There is huge latent demand for new transportation choices. The challenge is to develop neighbourhoods that are compact and liveable, so that people can get to their homes and businesses on their own power or on public transit. There are great synergies here: the most popular bike share stations in NYC are adjacent to our subway and commuter rail hubs like Grand Central, and every day, thousands of riders switch from train to bike or back again for that crucial last-mile connection. Meanwhile, the next generation of transit tech, including rideshare apps like Uber and Lyft will only further encourage people to leave their car keys at home. However you get around, everyone is a pedestrian at some point in their commute, and that's where our planning focus needs to start.

01 The pedestrian plaza at Times Square continues to attract people.

What is your vision of a utopic walking and bicycling city? What key features would such a city have, and which cities other than New York City do you think is on their way of achieving this?

This isn't rocket science – it's about rethinking how you use your streets so that they better serve everyone on two feet, two wheels, or four. During my time at NYC DOT, we developed 132 different strategies for this and the results spoke for themselves. We built almost 400 miles of bike lanes across the boroughs, focusing on a network that connected key destinations. We installed the nation's first protected bike lane, and now there are more than 200 nationwide. The country's biggest bike share system has seen more than 713,000 registrations and riders have travelled more than 25 million miles. It had a positive effect on real estate values and the city is working to expand it to even more neighbourhoods. And after installing or initiating 60 public plazas, the number continues to expand, and you're seeing countless safety improvements across the city. You don't need to wait around for a car-free utopia; the tools to build cities of the future are already within our grasp.

01

...[T]here is one universal truth no matter where you travel: if you design streets so cycling, walking and transit choices are attractive, safe, efficient and convenient, people will use them.

01 Delancey Street is one of the many streets in New York City made over with pedestrian plazas and bicycle lanes.

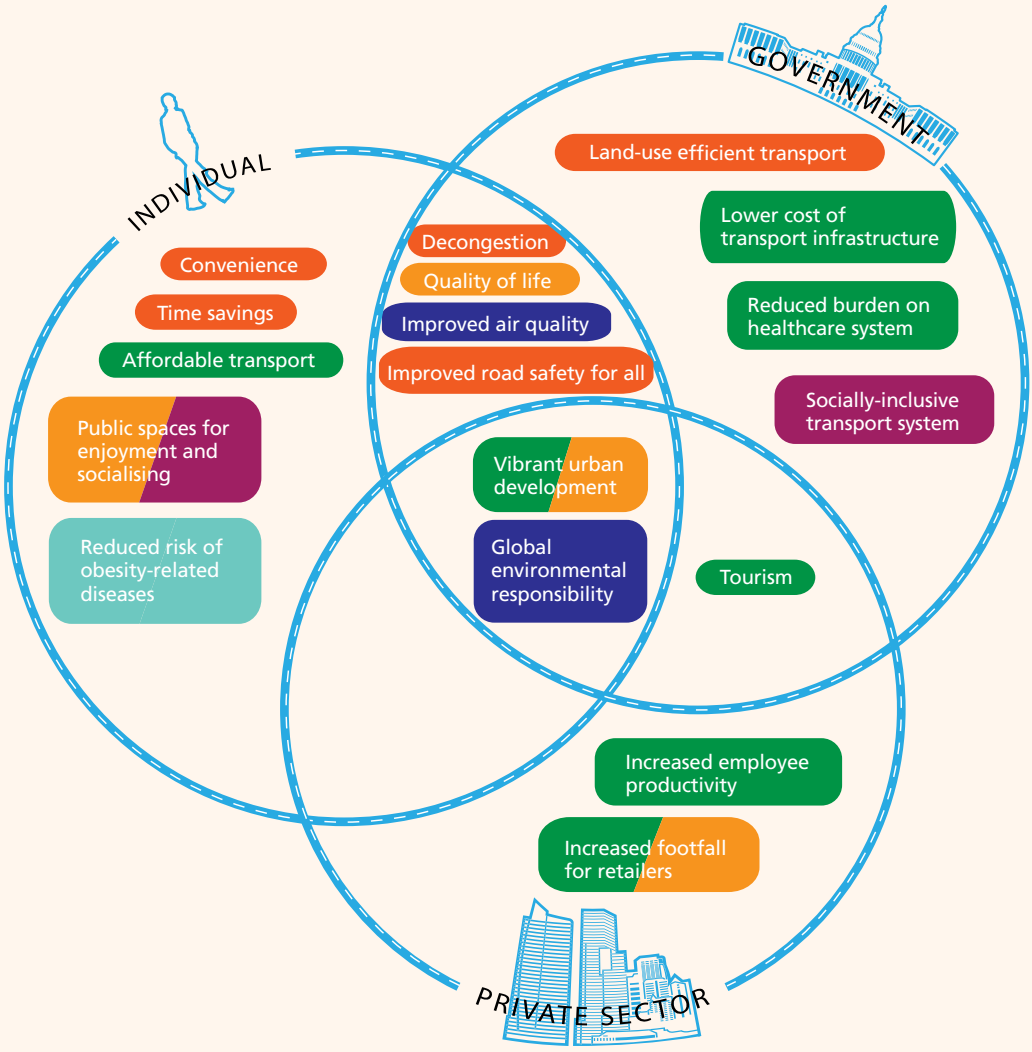
Many cities wish for the same success that New York City has achieved, but face obstacles such as lack of expertise, political support, and finances. In providing support to such cities, how does Bloomberg Associates stand out as a consulting firm from the rest in this regard?

No two cities are exactly alike and you need to play to your strengths and work around your constraints. Remember that even New York is a city of islands, with some 800 bridges and thousands of miles of streets, and we weren't exactly known for having the friendliest streets. So adding almost 400 miles of bike lanes took creativity and very careful planning, as well as world-class public outreach. At Bloomberg Associates, we have the opportunity to share what worked in New York and assist Mayors and other leaders from around the world in writing their own success stories. While every city is unique, there is one universal truth no matter where you travel: if you design streets so cycling, walking and transit choices are attractive, safe, efficient and convenient, people will use them – and you'll be well on the way to a more sustainable and more competitive city.

Active Mobility

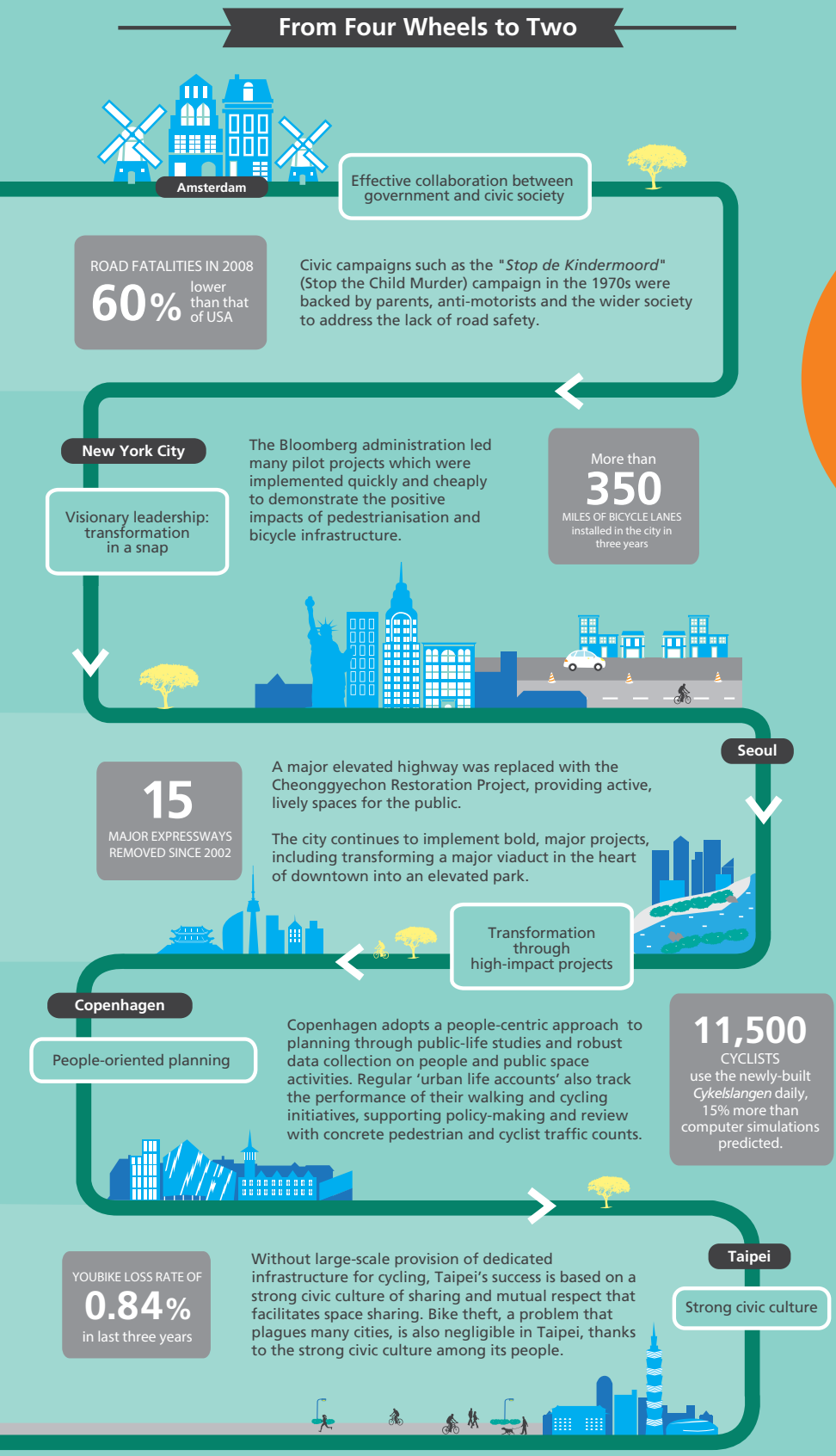
BENEFITS FOR ALL

Walking and cycling are not only highly effective and convenient forms of mobility, but also encompass a wide spectrum of benefits for all stakeholders in the city. These benefits range from improvements to health and liveability as well as economic and environmental contributions. With adequate investment and good design, cycling and walking can provide attractive mobility options for all.



Success Factors
FOR CITY TRANSFORMATION

Not all cities are created equal. Some cities have advantageous, pedestrian-friendly urban fabric retained from history, while others begin from a starting line of more motorist-centric infrastructure and urban sprawl. Some cities leverage on strong civic cultures that support space sharing, while others face strong anti-cycling sentiments. We take a look at success factors that can propel a city towards being more cycling- and pedestrian-friendly.



Melbourne

CREATING A GREAT STREET

Melbourne, Australia

Melbourne offers an example of how great cities start with great streets. **Lord Mayor Robert Doyle** sums up the renaissance of Swanston Street to become a pre-eminent, people-friendly civic space.

01 Swanston Street prior to the redevelopment.

The Challenge

Swanston Street has been the most frequented pedestrian strip in Melbourne since the 1850s and has the busiest tram route in the world. Melbourne's civic spine is trodden on by more pedestrians per day than Regent Street, London. It is home to some of the city's marvellous historic buildings, including the Town Hall, State Library and St Paul's Cathedral.

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It is also the main parade route, with grand processions celebrating Australia Day, Moomba, Christmas, Melbourne Cup, Australian Football League Grand Final and Anzac Day travelling down the thoroughfare.

When I became Lord Mayor in 2008, the road was a mess. At night, private vehicles could use it, but during the day, it operated as a quasi-mall that allowed buses, taxis and delivery vans only at certain times. It was confusing and disjointed, and also unsafe. Motorists, pedestrians and cyclists were not happy.

As a city, we needed to come up with an engineering solution to fix the traffic chaos and improve safety and amenity on the thoroughfare. The catalyst for action for me happened in September 2008, when a young, pregnant cyclist slipped on the tram tracks and was killed by a tour bus that ran over her.

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01 Swanston Street, bustling with people.

02 Swanston Street, outside of the Melbourne State Library.

03 Platforms were installed to allow people to board and alight trams safely.

The Solution

The City of Melbourne wanted to develop Swanston Street as the pre-eminent civic space that provides enhanced experiences for shoppers, visitors, workers, cyclists and tram patrons. There were five goals: for it to be a civic street, a people street, a shopping street, an accessible street and a gateway.

Councillors asked our urban designers to come up with a design solution which could achieve all the goals. The city authorities went out to residents, businesses and the wider public to ask them to have their say on a range of technically viable design options.

Initially, I was opposed to the idea of banning cars from Swanston Street but the more I considered it, the more it made sense. No great city wants to bring more cars into its heart. They do the opposite.

The City of Melbourne spent A$25.6 million to redevelop Swanston Street, with the first stage finished in late 2011 and the redevelopment completed in 2013.

The project included restricting private cars and taxis from entering the busy pedestrian and cycling route between Latrobe and Flinders Streets. Delivery vehicles could

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service businesses during limited hours. It involved installing new platforms for the public tram service, widening footpaths, improving bike lanes and beautifying and opening up public spaces.

The project aimed to build on the existing civic qualities of the street by creating four high quality public spaces: City Square, Bourke Street Mall, the State Library and the Royal Melbourne Institute of Technology (RMIT). The footpaths outside these great civic landmarks were extended to meet tram stops and provide greater definition of these spaces.

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It was all done properly. Swanston Street is paved in bamstone, the best bluestone. There is beautiful new lighting, a stormwater collection system to service nearby trees, and increased priority for trams, pedestrians and cyclists.

The clutter that was there has been removed. It has been an elegant and simple solution using the best materials, and thinking about the use of the street, public transport, pedestrians and cyclists.

To undertake this massive project, we had to work with various stakeholders who regulate Swanston Street, including the state transport department, tram operator and roads authority. An inter-agency steering group was convened to keep the lines of communication open, to collaborate and see the project through to fruition.

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We made sure that residents and businesses did not feel that this redevelopment was forced on them. We consulted widely with ratepayers and undertook an extensive community consultation campaign to listen to feedback and adapt our plans to suit the community's expectations.

Melbourne was recently ranked third in the Monocle Survey for Quality of Life. Monocle states that the most liveable cities in the world "get the essentials right". I believe Swanston Street is one example of that: getting the essentials right.

01 & 02 Swanston Street was redesigned following close consultation with all stakeholders.

03 Swanston Street during the day.

The Outcome

Today, Swanston Street works. It is safer, more attractive, less congested and more efficient.

The retail and hospitality sectors have also reaped the benefits. Increased pedestrians and tram passengers means more customers. The recently released Walking Plan revealed that increasing walking connectivity in the city by 10% would result in A$2.1 billion in economic uplift.

Pedestrian counts have been increasing dramatically. Over the last four years, there has been a 14% increase in foot traffic during the day on weekdays and a 20% increase during the day on weekends.

The answer to creating a city for people is this: create great streets, and all the rest will follow. Great cities need to be accessible, safe and attractive. Their streets need to be active and supportive of vibrant pedestrian economies and public transport users.

The Swanston Street redevelopment has made Melbourne a more people-friendly city. It has truly revitalised the city's heart.

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Robert Doyle has been the serving Lord Mayor of Melbourne since 2008. He is a Principal at The Nous Group, Chairman of Melbourne Health, President of the Lord Mayor's Charitable Foundation, Chairman of the Royal Melbourne Hospital Foundation and a Trustee of the Shrine of Remembrance. A Member of Victoria's Parliament for 14 years, Robert was Leader of the Opposition and Leader of the Liberal Party for four years. He has also been Shadow Minister for Health and Parliamentary Secretary for Health.

Find out more of Mayor Doyle's thoughts on Melbourne's cycling culture in his interview with CLC during the World Cities Summit:

https://www.youtube.com/watch?v=e6L4GvEf_zg

Seoul

TRANSPORT VISION 2030

Seoul's bold new municipal vision seeks to shift the city's heavy dependence on private cars to a more sustainable, shared, human-oriented paradigm. **Dr Joonho Ko**, Director of the Megacity Research Centre at the Seoul Institute, explains.

The Challenge

Over the past 40 years, Korea's dramatic economic development and rapid urbanisation have led to an explosion in private car ownership, affordable now even for the lower-income citizens. In the past four decades, the population of Seoul increased fourfold while the number of cars grew fiftyfold. More cars on the road have meant greater demand for infrastructure such as flyovers, widened roadways and car parks, while reducing space for other needs such as pedestrian spaces.

Previously, Seoul's transport policies were developed to cater primarily to the growing car population. Such car-oriented policies, however, were proven unsuccessful in supporting the ever-increasing demand for private transportation. Traffic congestion worsened, with average car speeds lower than 16 kilometres per hour in the central business district (CBD). In 2009, the social cost induced by traffic congestion in Seoul was estimated to be about US$7 billion for the year.

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Despite having implemented various policy interventions, including bus system improvements and travel demand control measures, a significant 26% of trips in 2010 was still made by passenger cars. Such trips accounted for 56% of energy consumption in the transportation sector.

Under these circumstances, it was obvious that continued dependence on private cars was unsustainable for urban development and contributing to growing inefficiency in the transport system.

01 Congestion on a street in Seoul, 2007.

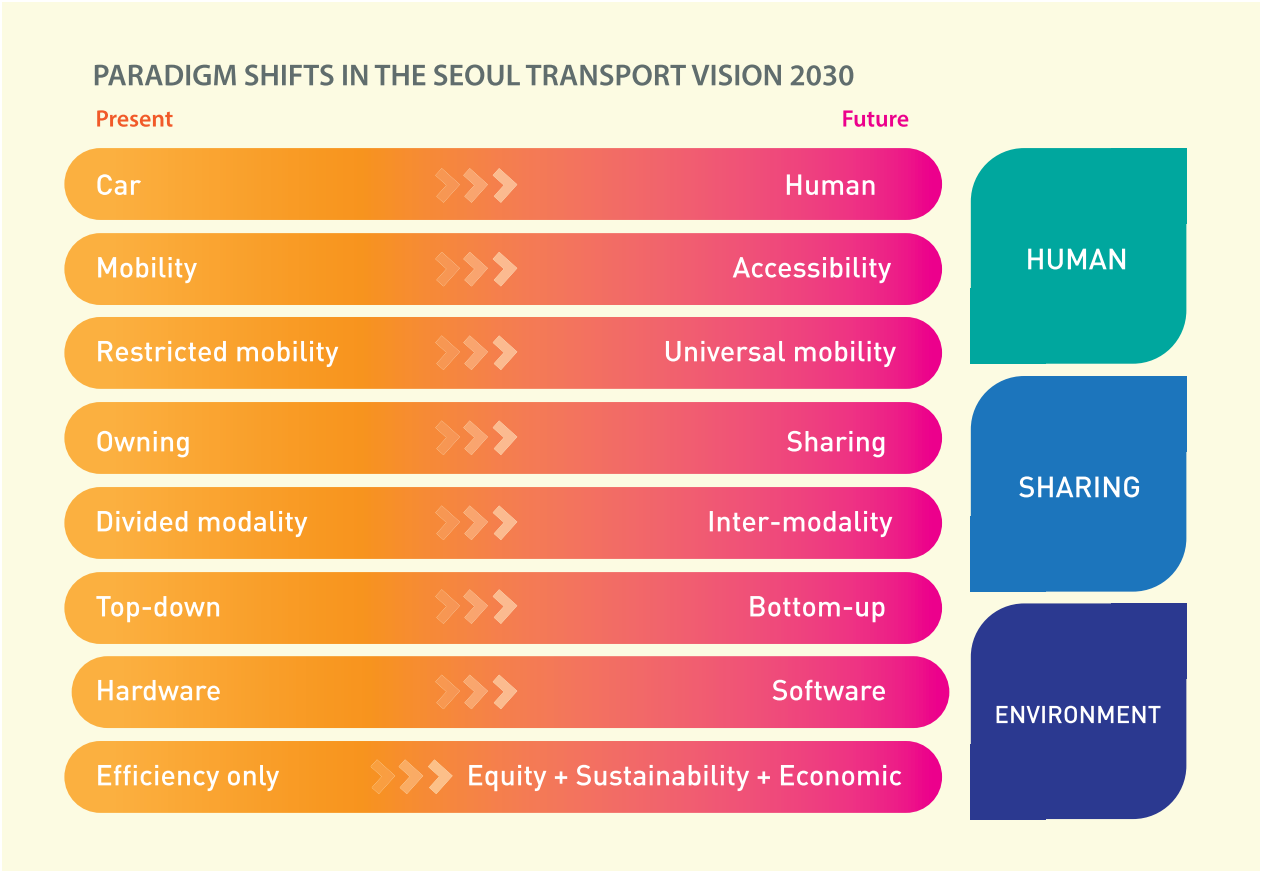
The Solution

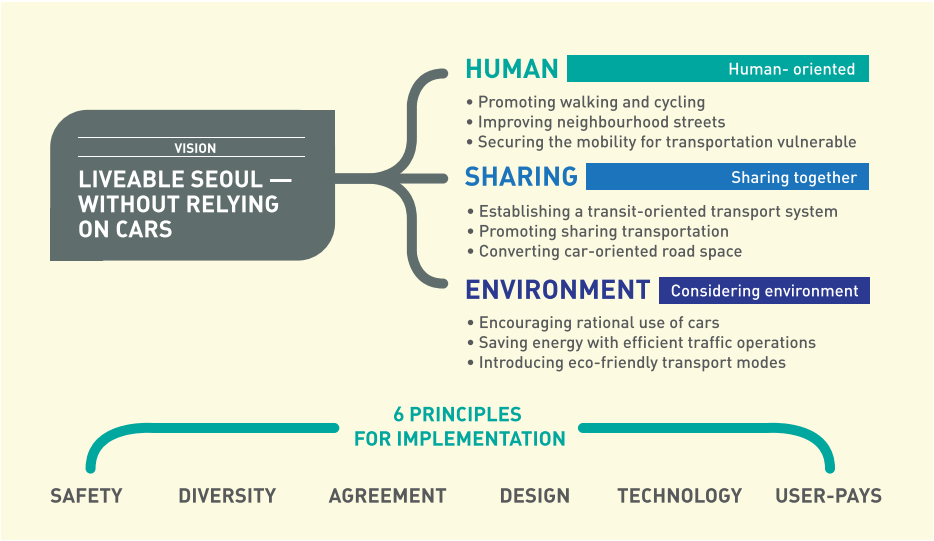
To address the city's transport concerns, the Seoul Metropolitan Government (SMG) developed a long-term, strategic policy for transportation. The Seoul Transport Vision 2030, the outcome of this effort, was announced in May 2013.

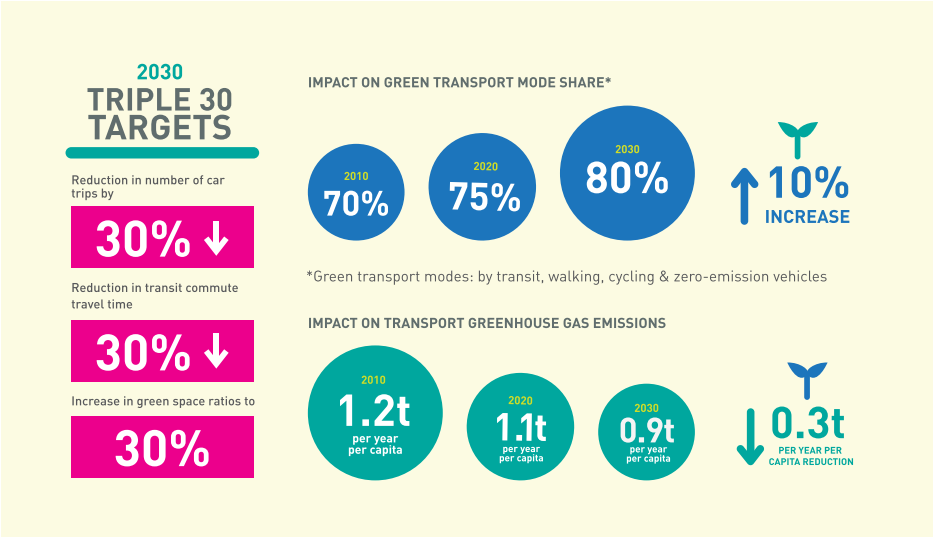
Paradigm shift

Incorporating perspectives from citizens and subject experts, the Vision set forth important paradigm shifts in Seoul's transportation policies, some of which include:

- prioritising pedestrians over cars;
- emphasising equitable accessibility over mobility;
- changing of perspectives from "owning" to "sharing" of travel modes and public spaces;
- taking a "bottom-up" approach for decision-making processes instead of a "top-down" one;
- integrating transportation systems, instead of persisting with divided modalities;
- attempting "software" measures before constructing infrastructural "hardware";
- considering not only efficiency, but also accounting for equity, sustainability and economic needs.







Vision

To anchor its new Vision, SMG adopted the slogan "Liveable Seoul without relying on cars" as well as three key concepts: "Human-oriented transportation", "Shared transportation" and, "Environmentally friendly transportation". SMG also set out an array of detailed transport objectives called the "2030 triple 30": a 30% reduction in automobile use, a 30% reduction in public transit travel time, and an increase in the city's green space ratio in the CBD from 10% to 30%.

If successful, Seoul could experience a 10% increase in green transport mode share from 70% to 80%, with a reduction in transportation CO_2 emissions from 1.2 tonnes to 0.9 tonnes a year per capita. SMG hopes to achieve this by 2030.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The Outcome

Seoul's new transport vision – based on sharing, and taking on human and environmental priorities – is already being realised.

Road diet

A transit mall – accessible only to buses, emergency vehicles and pedestrians – was established by SMG in January 2014. Built in the Sinchon area by reducing vehicle travel lanes from four to two, and widening the sidewalks, the street mall spans 550 metres. This design discourages cars and encourages public transport use. A survey conducted after six months showed a 34% reduction in traffic accidents, an 11% increase in bus users, and a 4.2% increase in sales for shops in the local area. In addition, the proportion of citizens satisfied with the transit mall rose from 12% to 70%.

01 The widened sidewalks at the transit mall provide more space for pedestrians, and can accommodate public events.

02 The transit mall in the Sinchon area.

Removal of flyovers

While flyovers help keep car traffic flowing, they can blight the urban landscape, obstruct pedestrian movement, and hinder the installation of median bus lanes. SMG has thus demolished some flyovers to promote urban vitality. A subsequent survey indicated that vehicular speeds have remained the same, while land values near the new intersections have risen after the flyovers were removed.

Reducing demand for cars and delivering more environmentally friendly cars

To further reduce the demand for cars, SMG launched a car-sharing program in 2013, which saw the deployment of more than 1,300 cars – approximately 300 of which are electric cars. Since September 2014, ten electric taxis have begun operating in the city, to evaluate the viability of electric cars as commercial vehicles over longer travel distances.

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Joonho Ko is the director of Megacity Research Center (MRC) in the Seoul Institute, the think tank of Seoul Metropolitan Government, Korea. His area of expertise is in transportation studies, such as public transportation, green car deployment and congestion mitigation. He has also participated in various traffic and environmental impact assessments. He earned his PhD in transportation systems engineering from the Georgia Institute of Technology, USA.

01 An all-electric bus in the Namsam area. All city buses will be gradually replaced with environmentally-friendly buses by 2030.

02 The Cheonggyecheon Restoration Project is one of Seoul's most famous flyover-removal projects. Where concrete and a flyover once covered the Cheonggye river, public recreation space has been restored. The government intends to demolish more flyovers for better pedestrian accessibility, urban vitality and bus access.

No More Barriers

PROMOTING UNIVERSAL DESIGN IN SINGAPORE

Retrofitting and revamping access to all public buildings in a whole country is a massive task. **Dr John Keung**, CEO of Singapore's Building and Construction Authority (BCA), describes the agency's efforts to make buildings friendly for people of all ages and abilities.

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The Challenge

Along with Singapore's rapid urbanisation from the 1950s, a dense, high-rise built environment was created. At that time, the majority of the population was young and able. The need to provide barrier-free accessibility was not a critical concern, compared to maximising land resources for the economic and social needs of a growing population.

1990 was a milestone year for Singapore's accessibility efforts. Although the population was still fairly young, a Code on Barrier-Free Accessibility in Buildings was introduced to help improve accessibility standards, especially for wheelchair users.

It had been estimated that the number of senior citizens, many of who would face deteriorating physical abilities, would increase threefold. Thus, the goal of cultivating an inclusive built environment that supported "ageing-in-place" was conceived, to help individuals adapt to ageing in their homes – surroundings familiar to them. This would also allow families to care for older members. The concept of universal design, or "design for all", was incorporated into BCA's mission, to address the needs of people of all ages and abilities.

With this goal, a key challenge was upgrading the large existing stock of buildings built before the 1990 Accessibility Code came into force. There was also a need to go beyond providing barrier-free accessibility within buildings and ensure that the surroundings of buildings are similarly barrier-free.

01 Long flights of stairs impede access for the physically disabled and parents with strollers.

02 A friendly built environment that supports ageing-in-place.

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The Solution

In 2006, BCA started a big push for universal design with the Accessibility Master Plan. Holistic and collaborative in nature, the plan allows BCA to work with other agencies to tackle the past, present and future challenges of creating a user-friendly built environment in Singapore.

To address older buildings which were not barrier-free, BCA implemented an accessibility upgrading programme from 2006 to 2011, targeting buildings and areas regularly visited by the public.

Since 2007, BCA has been advising government agencies on the upgrading of public-sector buildings with a base set of features for accessibility, which covers accessibility of approach to buildings and within the first storey, including a toilet on that level. BCA has also played a role in facilitating and monitoring the upgrading progress.

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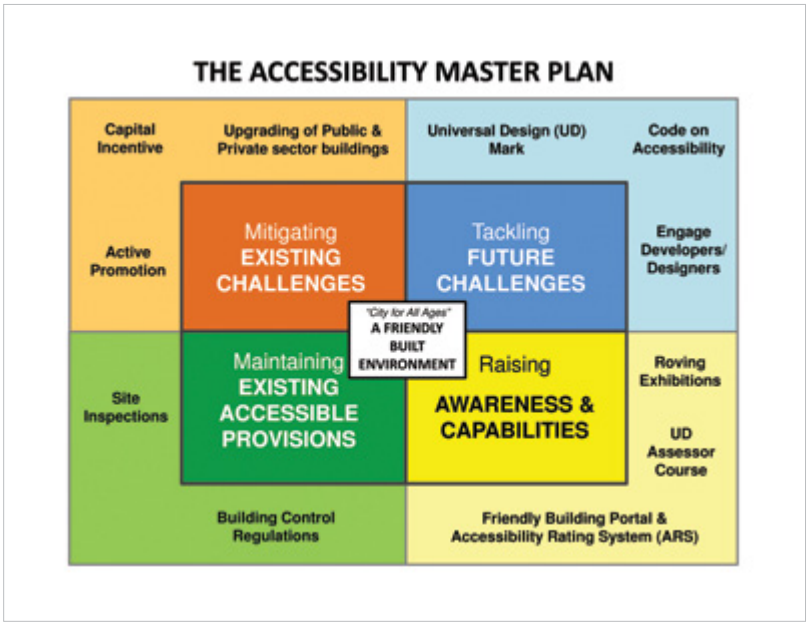

To incentivise owners of private-sector buildings to upgrade their premises to be barrier-free, BCA introduced the Accessibility Fund in 2007, which supports up to 80% of the total cost of refurbishing buildings to include basic accessibility features. In particular, BCA worked with building owners to improve accessibility along Orchard Road, a popular shopping district where most of the buildings were built before mandatory requirements were set in 1990.

The Accessibility Code has undergone several revisions and updates to meet the needs of the time. The last review of the Code was conducted between 2011 and 2013, based on collaboration among the people, private and public sectors. Numerous public consultations, focus group discussions and user trials with stakeholders were held, to ensure the Code was comprehensive and could benefit more Singaporeans.

For example, the 2013 Code review highlighted the need for more facilities that could cater to people with diverse needs. Child-friendly sanitary facilities and family car park lots have thus become required in buildings such as sports complexes and large shopping malls. Other facilities that have also become mandatory include Braille and tactile information for public toilet signs, and hearing enhancement systems in venues such as function rooms and auditoriums. The Code was also refined to include wider corridors for easy access for wheelchairs and prams.

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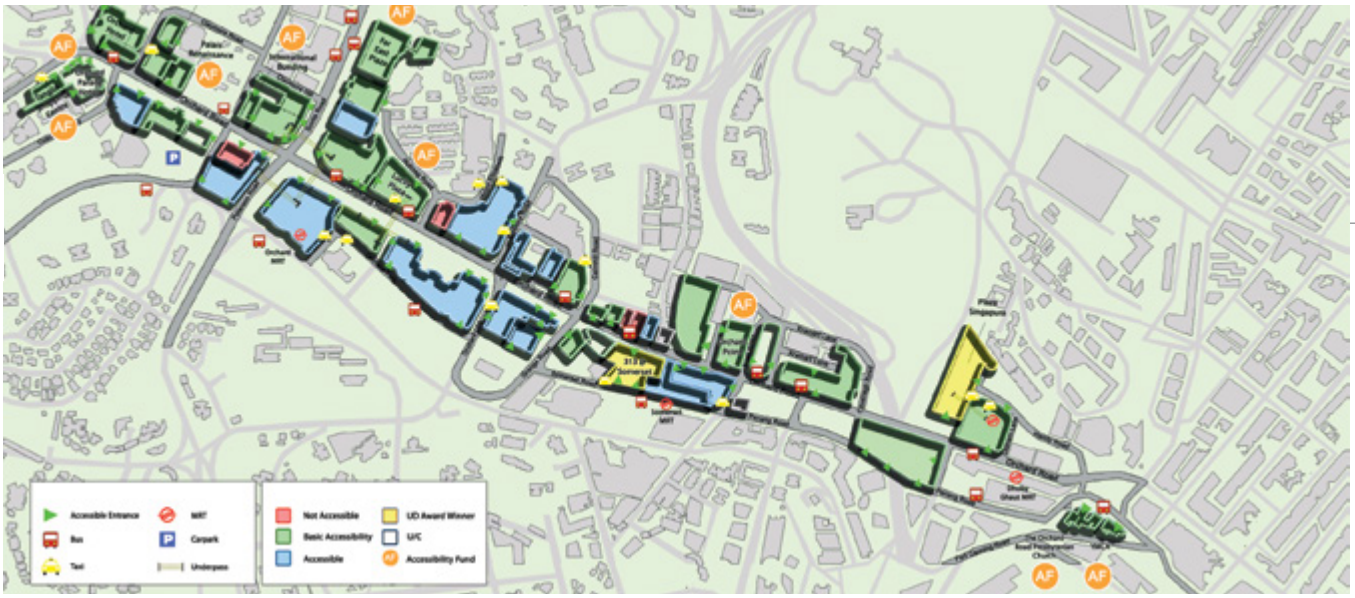
At the same time, BCA continues to encourage developers, building owners, designers and other industry stakeholders to apply universal design in new developments and those undergoing upgrading. To encourage stakeholders to do more than just comply with the Code, BCA promotes universal design through courses, roving exhibitions and seminars. In particular, the BCA Universal Design Awards recognises development projects that show extensive efforts in applying universal design concepts with user-friendly features. A "sensory garden" available for public viewing at the BCA Academy also serves as a model to demonstrate the universal design concept.

To widen outreach efforts, BCA has also begun to rate the user-friendliness of buildings. This information is available in the Friendly Buildings Portal, where users can check the level of accessibility of a building. A mobile application is also being developed for this purpose.

01 The Accessibility Master Plan.

02 The tactile pathways in the BCA Sensory Garden.

03 The musical pipes at the Sensory Garden allow visitors to create music.



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The Outcome

Today, people with mobility aids or on wheelchairs are no longer confined to their homes. They can now be seen moving around neighbourhood markets, food centres, shopping malls and activity centres with ease. Close to 100% of public-sector buildings regularly frequented by the public now have basic accessibility. About 90% of buildings along the Orchard Road shopping belt are now universally accessible – a marked improvement from 41% in 2006.

Since the introduction of the BCA Universal Design Mark, a voluntary certification scheme, BCA has received more than 70 applications and recognised 57 building owners for their efforts in incorporating universal design into their developments. Many developers now specify, as part of their design briefs, their desire to achieve Platinum rating for the BCA Universal Design Mark, the highest standard. In 2013, the BCA Universal Design Mark was recognised as an innovative practice at the international Zero Project Conference at the United Nations Office in Vienna, Austria. Universal design is certainly no longer an unfamiliar term.

Dr John Keung
is the Chief Executive Officer of Singapore's Building and Construction Authority. A chartered town planner, Dr Keung is also an Adjunct Professor in the Department of Architecture, National University of Singapore and a member of the College Advisory Committee, College of Engineering, Nanyang Technological University.

He was instrumental in the implementation of the Barrier-Free Accessibility Masterplan that resulted in the proliferation of barrier-free and universal design features in buildings.

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01 The Orchard Road Shopping Belt has improved its accessibility from 41% to 90%.

02 & *03* The Interlace was awarded a Platinum rating for the BCA Universal Design Mark in 2014 for its attention to universal design, such as furniture which can be adjusted to accommodate wheelchair users.

04 & *05* The wheelchair- and stroller- friendly ramps in the Flower Dome and Cloud Forest were some of the features which earned Gardens by the Bay their BCA Universal Design Mark Platinum rating in 2014.

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Taipei City, Taiwan

Taipei

BUILDING A CYCLING CITY

On a bid to reduce traffic congestion and ease environmental pollution in the city, the Taipei City government launched a public bicycle-sharing scheme called YouBike in 2009 to promote cycling among its residents. Former mayor **Dr Lung-Bin Hau** shares how the city overcame initial challenges to popularise the YouBike scheme, improve the lives of its citizens, and in the process, propel Taipei City into the global limelight for its efforts.

The Challenge

Taipei City has prided itself on being an environmentally friendly city and the city government has declared green transportation as one of its priorities. In Taipei, there are, on average, more than one million motorcyclists commuting from New Taipei City to Taipei daily. If residents can be encouraged to use public transport and to use bicycles for the last mile of travel, the city will be able to improve its resource efficiency while making the environment cleaner and more liveable.

Getting the public to understand the full extent of the negative side effects that private transportation generates was one of the major challenges faced in making the transition to greener forms of transport. These effects included the impact on the environment, the increase in local air pollution and traffic congestion.

A multi-pronged strategy was required to increase the awareness among residents of the externalities of private transport and to make public transportation more convenient, affordable and accessible than private cars.

01 Traffic conditions in Taipei City, 2006.

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01 Electric buses with tracking services play an important role in Taipei City's transportation system.

02 One of the pioneer YouBike stations, photographed in March 2009.

03 Dr Hau Lung Bin cycling on a YouBike.

04 The refinements in the Youbike scheme saw more bicycles available for rent at more stations throughout Taipei City.

05 Renting a YouBike can be done easily at YouBike kiosks, with an EasyCard or mobile phone.

The Solution

The first step taken by the city government was to review and rationalise usage fees such as parking for private vehicles. It reduced the road area allocated to private motor vehicles and increased the space set aside for walking and cycling needs. The government also implemented the environmentally-friendly Metropolitan Rapid Transit (MRT) rail network, as well as an electric bus system.

Next, the government made moves to improve first- and last-mile transport services by setting up a public bicycle-sharing scheme called YouBike and by enhancing the pedestrian walkways. The latest advances in information technology were also integrated into the transport system, providing commuters with bus-tracking information. The government also allowed inter-city express coaches on highways.

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YouBike was first launched in March 2009 in the Xinyi District to a slow start. Several factors made the scheme unpopular. With only 500 bicycles provided at 11 stations, coverage was limited. Registration was also difficult, and the cost of using the bikes was comparable with the other modes of public transportation.

With the lessons learnt from the initial launch, and by adapting best practices gleaned from studying other countries, the government made improvements to the YouBike scheme. More stations were built in August 2012, and the registration process simplified. The cost of rental was also significantly lowered.

The first wave of extensions saw an addition of 30 rental sites and 960 bicycles throughout Taipei. Today, anyone with an EasyCard (a stored-value smartcard for travel within Taiwan) or mobile phone can go online to register as a YouBike member and then use an EasyCard to rent a bicycle.

Initially, the rental rate was NT$10 per half hour – significantly cheaper than taking a taxi. To further encourage the use of YouBike, the Environmental Protection Administration decided to cover the cost of the first 30 minutes of every trip. This enabled commuters to simultaneously save money and do their bit for the environment.

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The Outcome

These improvements have significantly boosted the popularity of YouBike and since July 2014, the scheme has been made available in all 12 of Taipei's administrative districts. By the end of 2014, 6,406 bicycles at 196 stations had been set up to serve commuters. In total, about 33 million trips have been made with YouBike, with the monthly average at two million rides. With YouBike's increasing popularity, the use of bicycles has increased by 24% since 2011.

Taipei's efforts in boosting green transportation have since been reported widely and is well regarded even outside Taiwan. As a reflection of the recognition it has gained, Taipei won the right to

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01 Taipei's public transport.

02 Taipei citizens on Youbikes.

03 Taipei citizens cycling along the river.

04 Taipei citizens on bicycles.

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host the Velo-city Global Summit 2016, an international planning conference on cycling founded by the European Cyclists' Federation. Taipei is now also considered a role model for other Asian cities, with more than 60 cities in the continent including Tokyo, Seoul, Penang and Xuzhou, expressing interest in learning about the YouBike scheme.

Today, Taipei boasts a more integrated and sustainable mobility network, mainly due to the improvements in public transportation implemented in the recent years. Residents' mindsets are also changing and many of them are purchasing their own bicycles to travel around the city, both for commuting and as a leisure activity during the weekend, cycling along the riverside bicycle lanes.

Despite the successful results achieved in the past three years, the government is not resting on its laurels. It is determined to raise the proportion of Taipei residents who use bicycles in the last mile of their journey from 5% today to 12% by 2020. If it achieves this goal, the city's total carbon dioxide emissions would fall from two million tonnes per year in 2012 to 1.89 million tonnes per year.

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Dr Lung-bin Hau was inaugurated as Mayor of Taipei City in 2006. He was committed to enhancing Taipei citizens' quality of life. During his term, Taipei was awarded the hosting rights of the 2009 Deaflympics, the 2010 Taipei International Flora Expo and the 2011 Taipei World Design Alliance. Dr Hau also enabled direct flight services from Taipei Songshan Airport to cities across the Taiwan Strait, and developed Taipei into a major Asian tourist city.

Find out more of Dr Hau's thoughts on Taipei's cycling culture in his interview with CLC during the World Cities Summit:

https://www.youtube.com/watch?v=fDraFElrpGg

Young Leader

Ridwan Kamil

Creative Solutions FOR A YOUNG CITY

Architect, lecturer and social activist **Ridwan Kamil** appears to be perfectly suited for his role as mayor of Bandung, a young city where 60% of its population is under 40 years of age. Just 44 years old himself, he has come up with several creative solutions to tackle rapid urbanisation in one of Indonesia's fastest growing cities. In this interview with CLC's Lim Swee Keng at the World Cities Summit held in June 2014, Ridwan Kamil talks about challenges facing Bandung including the provision of a sustainable transport infrastructure and to need to keep its citizens happy.

Ridwan Kamil on…

Bandung's Transformation Over the Years

Bandung is a city of 2.5 million in West Java, Indonesia. It's a metropolitan city with a cool climate. This is the reason why people love Bandung. As a metropolis, we face many issues, but there are many opportunities as well. For instance, we are the second most popular tourist destination in Indonesia – with six million tourists visiting the city annually. In the last couple of years, this has dramatically changed the landscape of Bandung.

Bandung also has more than 80 universities and colleges with 60% of its population under 40 years old. This means it's a city with a high percentage of educated young people. They are the key drivers of Bandung's creative economy and it's our vision that this creative economy becomes the generator that powers the city. Bandung is now one of the best performing economies in the country with almost 9% GDP

growth, outperforming the national GDP growth rate of 5.8%. This has put more pressure on the existing public transport infrastructure, so it is important to plan for the future growth of Bandung.

Bandung's Current Challenges

The key challenge is to provide infrastructure to support new economic opportunities. A proposal to build a monorail system to meet Bandung's growing transport needs is being prepared. We are also proposing a cable car network as a means of public transportation because the city is hilly. This is part of our master plan called "Bandung Urban Mobility Projects". It's how we envision people will move around the city in the future.

Apart from the monorail and cable car, we are also providing bike-sharing and bike-renting options for intercity commuting. To complement this, we are building Bandung's Skywalk – a series of bridges that will criss-cross the city and create better connectivity for people.

Urban Mobility within Bandung

When we talk about mobility, it's not always about moving people by machine or cars. Whether it's public or private transportation, there are other options. That's why we are giving people a range of options to move around in Bandung. We have some challenges to face as only 20% of the population currently use public transport with 80% still choosing to use cars or motorbikes. Our target is to flip this situation around such that 80% use public transport, with the remaining using cars or motorbikes.

One way to do this is to make walking a more attractive option. We have started to do this by upgrading pedestrian paths everywhere in the city. We have the Skywalk, which is raised above the street level, to allow people to walk in the city without having to stop at traffic intersections. So by simply giving people more options to move within the city, I think we can create a more sustainable and liveable Bandung.

New Ways of Making Bandung More Liveable

We are currently experimenting on a new concept called "Happiness Projects." Happiness Projects have been devised to address short-term goals while we wait for big projects, that may takes years to complete, to come on-stream. For instance, we created Bandung Fun Days as a part of the Happiness Projects. So Mondays in Bandung are now a Free Bus Day; Tuesday is No Smoking Day; Wednesday is Sundanese Day for wearing traditional outfits and speaking the local language; Thursday is English Day; Friday is Bike To Work Day and Saturday is Festival Day, with one of 30 culinary festivals spread out over the whole city.

> *When we talk about mobility, it's not always about moving people by machine or cars.*

Liveable cities are not always about economic measures and standards but also about happiness because an advanced society is a happy society.

Watch the full interview with Mayor Kamil at the World Cities Summit 2014:

https://www.youtube.com/watch?v=WIkH_FUYB-c

Young Leader

Stephen Yarwood

Imagining a Future OF CYCLING CITIES

At 43, **Stephen Yarwood** is an urban futurist with nearly two decades of experience in state and local government. Recently completing a term as Lord Mayor, he was the youngest person to have ever led the City of Adelaide. In an interview with CLC's Lim Swee Keng at the World Cities Summit held in June 2014, he discusses the importance of integrated transport for cities, and how he believes the introduction of separate bicycle paths would address a host of urban problems and generate income for local businesses.

Stephen Yarwood on…

- **Adelaide's Urban Mobility Challenges**

We are tackling an obesity epidemic in the Western world, and we have all become used to driving everywhere. That's creating congestion on our roads, reducing the productivity of our cities, and making our cities less attractive.

Adelaide, like many cities, is in the car-dependency paradigm, and we should try to generate conversations around integrated transport. We are seeing cities becoming increasingly dependent on the vehicle, which in itself is an economic cost in terms of congestion and the price of fuel. It also means that we are facing obesity. In fact, obesity has now overtaken smoking as the biggest killer of Australians. One in four Australians is obese, and one in three Australians is overweight. We must start to talk about creating walkable environments, encouraging people to use public transport, to walk more often and also

to use a bicycle. Instead, we are building more roads. We're not investing enough in public transport. We really need to change the whole conversation about how people move through cities to increase liveability, productivity and sustainability.

Cycling in Cities

I've discovered this wonderful technology that can help you lose weight, save money and get through a city more quickly. It makes you happier, makes you live longer, and makes the city a much more attractive, cosmopolitan place. Evidence also suggests that people will even spend more money in local shops.

It's called cycling.

The evidence is clear, and I – just like every city leader in the world – am promoting integrated transport, where you can choose between driving a car, using public transport, walking or cycling. I believe that the electric engine, including electric-assisted bicycles, will change mobility in cities. You may be old, you may be unfit or you may even have an injury, but you can use an electric bicycle to extend your range and get from A to B. And of course, when you get to your destination, you can park right outside the front door.

Challenging the Status Quo

Well, everyone wants progress, but change is challenging. We need to make cycling safer in our cities. In Australia, we sell more bicycle than cars each year. 80% of Australians have a bicycle; only most don't ride it because it's not safe. So we need to put in separate bicycle lanes. That change has been a challenge for small businesses. So we must engage them in a conversation. Cars driving fast past their shops don't spend money, but cyclists, who live locally, can see the displays in their windows, can stop at any time, and will stop more regularly and purchase goods. The evidence is clear from cities around the world that cycling environments generate more income for businesses. Heavy traffic – with its related congestion, pollution and noise – doesn't make for a great retail strip.

We really need to change the whole conversation about how people move through cities to increase liveability, productivity and sustainability.

Watch the full interview with Stephen Yarwood at the World Cities Summit 2014:

https://www.youtube.com/watch?v=V4Lmoee3LgI

ABOUT THE World Cities Summit Young Leaders

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.

CITY PLANNING FOR PEOPLE

A growing number of cities are taking a human-centric approach to urban planning, and central to that strategy is making a city pedestrian- and cyclist-friendly, says **Jan Gehl** and **Birgitte Bundesen Svarre**.

For decades, the human factor has been overlooked and haphazardly addressed in urban planning. Residents in many cities across the globe today face limited space, obstacles, noise, pollution, risk of accident and generally disgraceful conditions, regardless of global location, economic viability and stage of development. This has not only made it difficult for cities to become more pedestrian-friendly, but has also jeopardised the social and cultural functions of city space such as community interaction, or even just enjoying the aesthetic experience of taking a break in a main square. Fortunately, an increasing number of cities are realising the value of a human-centric approach to urban planning, to create livelier, safer, healthier and more sustainable cities.

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...cities are realising the value of a human-centric approach to urban planning, to create livelier, safer, healthier and more sustainable cities.

The Human Dimension

After years of neglecting the human dimension, there is now growing awareness and willingness to create cities, first and foremost, for people and their needs. Urban planners and architects are recognising the importance of designing cities that reinforce pedestrianism, in order to develop lively, safe, sustainable and healthy cities. Equally urgent is strengthening the social function of city spaces as meeting places that fulfil the aims of social sustainability and an open and democratic society.

The great cities of the world such as Copenhagen and New York invite people from all walks of life to meet and spend time together, find peaceful respite, or enjoy being 'alone together'. Offering a variety of options for walking and moving around in a city allows citizens to spontaneously socialise with an acquaintance, visit a shop or a café. Providing quality public spaces allows citizens to feel welcome, empowers people and makes them feel part of a greater community.

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01 Købmagergade, a popular pedestrian shopping street in Copenhagen.

02 An open city provides opportunities for engaging with others.

Lively, Safe, Sustainable and Healthy Cities

A city with calmer traffic, where people are able to walk, bike and stay within city space, is a lively city. The vitality of public life in a city can be measured based on people-centred metrics such as pedestrian flow, time spent lingering in an area, and the use of streets and spaces after dark. A lively city in turn provides positive side effects as a city with life also contributes to a safer, more sustainable and healthier city.

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A vibrant city that is people-friendly is a safe city. Cities which make it attractive for people to walk must by definition have a reasonably cohesive structure – one that offers short walking distances, attractive courses of space, a variety of urban functions such as places for meeting friends, and opportunities for running personal errands. These elements increase activity and the feeling of security in and around city spaces, as there are more eyes watching the street, and residents are drawn to events in the city from surrounding housing and buildings.

A lively city, where most of its people travel by foot or bike, is a sustainable city. These forms of green transport, as well as other forms of public transport such as buses, light rail and train, provide marked benefits to the economy, resource consumption, and the environment.

A key link between the safety and sustainability of the city is that public transport becomes more attractive if users feel safe and comfortable walking or cycling to and from these modes. Good public spaces and a good public transport system are thus two sides of the same coin.

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...public transport becomes more attractive if users feel safe and comfortable walking or cycling to and from these modes.

01 The pedestrian plaza at Madison Square, which has brought new life to New York City.

02 Going to work in the City of Copenhagen, of which 41% use bicycles, 24% drive a car, 30% use public transport, and 5% walk.

03 A bicycle pavement in Copenhagen. The pavement continues along the place where smaller streets meet with main streets, making it safer for pedestrians.

In many parts of the world, rapid growth in public health problems can be seen because large segments of the workforce have become sedentary due to the evolution of jobs in a post-industrialised era. Cars providing door-to-door transport have further eliminated opportunities for any physical activity in the daily lives of urban dwellers. One way of addressing this problem is to make it as attractive and easy as possible for people to walk and cycle within their city. The health of city dwellers can be enhanced dramatically if walking or biking can be a natural part of the pattern of daily activities.

The cities of Copenhagen and New York have realised their visions of a more people-centric city by prioritising bicyclists and pedestrians in their city planning.

Better Conditions for Cyclists Encourages More to Cycle – Copenhagen

The City of Copenhagen has been continually encouraging its people to bike more. For several decades, the city has been restructuring its street networks, removing driving lanes and parking places in a deliberate process to create better and safer conditions for bicycle traffic.

The entire city is now served by an effective and convenient system of bike paths, separated by curbs from sidewalks and driving lanes. City intersections have bicycle crossings painted in blue and special traffic lights for bicycles that turn green six seconds before cars are allowed to move forward. Such initiatives make it considerably safer to cycle around the city.

The results are reflected clearly in its patterns of use. Bicycle traffic has doubled in the period from 1995 to 2005; and in 2014, statistics showed that 41% of personal transport to and from work and educational institutions was by bicycle. The goal is to increase this percentage considerably in the years to come.

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[A] new bicycle culture is emerging...cycling in the city has become the way to get around.

As conditions for cyclists improve, a new bicycle culture is emerging. Children and seniors, business people and students, parents with young children, Members of Parliament and Mayors alike are riding bicycles. Cycling in the city has become the way to get around. It is faster and cheaper than other transport options while also being good for the environment and personal health.

Interplay Between City Life and The Quality of City Space – New York City

In New York City, although pedestrian traffic has traditionally dominated the streets of Manhattan, it has been difficult for city dwellers to find a spot to sit, watch and enjoy city life.

In 2007, an extensive programme was launched to encourage greater versatility in city life, with a focus to provide better options for recreation and leisure for pedestrians. For example, on Broadway, sidewalks were expanded to provide room for café chairs and places for passers-by to sit. Other new car-free areas, called pedestrian plazas, have been similarly established at Madison Square, Herald Square and Times Square.

These initiatives have almost instantly enriched city life and made it far more multifaceted. Instead of a city where people are always moving, people can now sit in the middle of bustling activity to people-watch, enjoy the cityscape, or simply take a break from their busy work schedules.

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Cities by People and for People

What is remarkable about the development in Copenhagen and New York is that it reflects a growing understanding that cities must be designed to invite pedestrian traffic and city life. These cities recognise the importance of calmer forms of traffic in creating a sustainable and healthy society, and they also acknowledge the important role that city spaces play as informal and democratic meeting places for their residents.

In this way, planning with human beings as the point of departure – rather than cars, traffic, or different transport systems – can create environmentally, economically and socially sustainable cities.

01 Cyclists in Copenhagen.

02 The pedestrian plaza in Madison Square.

03 An aerial view of Madison Square, New York.

Four Goals – One Policy

There is growing interest in people-focused city planning, where there are direct connections between improving public spaces and enhancing the liveability, safety, sustainability and health of the city.

Such a people-centric approach can be seemingly hard to adopt in developing countries, where most of the population is forced to use city space intensively for many daily activities, in particular for motorised transportation.

However, as the cases of Copenhagen and New York have shown, compared with other social investments such as healthcare or automobile infrastructure, the cost of people-centric urban planning is modest, and its benefits, far-reaching. This shows that investments in this area can be possible for cities in all parts of the world, regardless of development status and financial capability.

...the cost of people-centric urban planning is modest, and its benefits, far-reaching.

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Reprioritising Pedestrians – the Singapore Advantage

Singapore is a small island with beautiful well-maintained buildings and lots of greenery. Singapore's dense urban structure and good public transportation system can enable her to further promote cycling and walking as modes of transport.

As Singapore is hot and humid, longer trips can be made on public transport, complemented by shorter cycling and walking trips. Singapore can further increase the number of bicycles allowed on public transportation such as on trains, buses and even taxis. Doing so will encourage Singaporeans to walk, cycle and take public transport even more.

With that, Singapore can be one of the first cities where dependence on motorcars can be eliminated or significantly reduced. As calmer traffic, public transportation and public spaces are closely related, a truly liveable city is possible, through implementing a people-oriented planning strategy.

Portions of this text have been based on the book by Jan Gehl, Cities for People (2010), Washington DC: Island Press.

Jan is Founding Partner of Gehl Architects and former Professor at The Royal Danish Academy of Fine Arts, School of Architecture. An architect by training, his approach to public space design incorporates technology without compromising the benefits that public spaces bring to people's lives. His most recent publication is 'How to Study Public Life'. Jan has collaborated on projects for many cities, including Copenhagen, London, Melbourne, Sydney, New York and Moscow. He is an honorary fellow of RIBA, AIA, RAIC, and PIA.

Birgitte is a key researcher at Gehl Architects. She holds a PhD in architecture and public space. She is the co-author of the latest Jan Gehl/Gehl Architects book 'How to Study Public Life'. She is an Associate Professor at Denmark's Technical University, is also actively involved in masterclasses and workshops, and guest lectures at various universities.

Find out more about Jan Gehl's thoughts on planning for people-oriented cities:

https://www.youtube.com/playlist?list=PLGKE0U1p8Rxj72_FgblJgrFZ0TNHbIhVa

01 Jan Gehl shares a laugh with former ULI president Scott Dunn at the Bikeshop, organised as part of the study by CLC and ULI.

ACTIVE MOBILITY IN CITIES:
TEN DESIGN PRINCIPLES

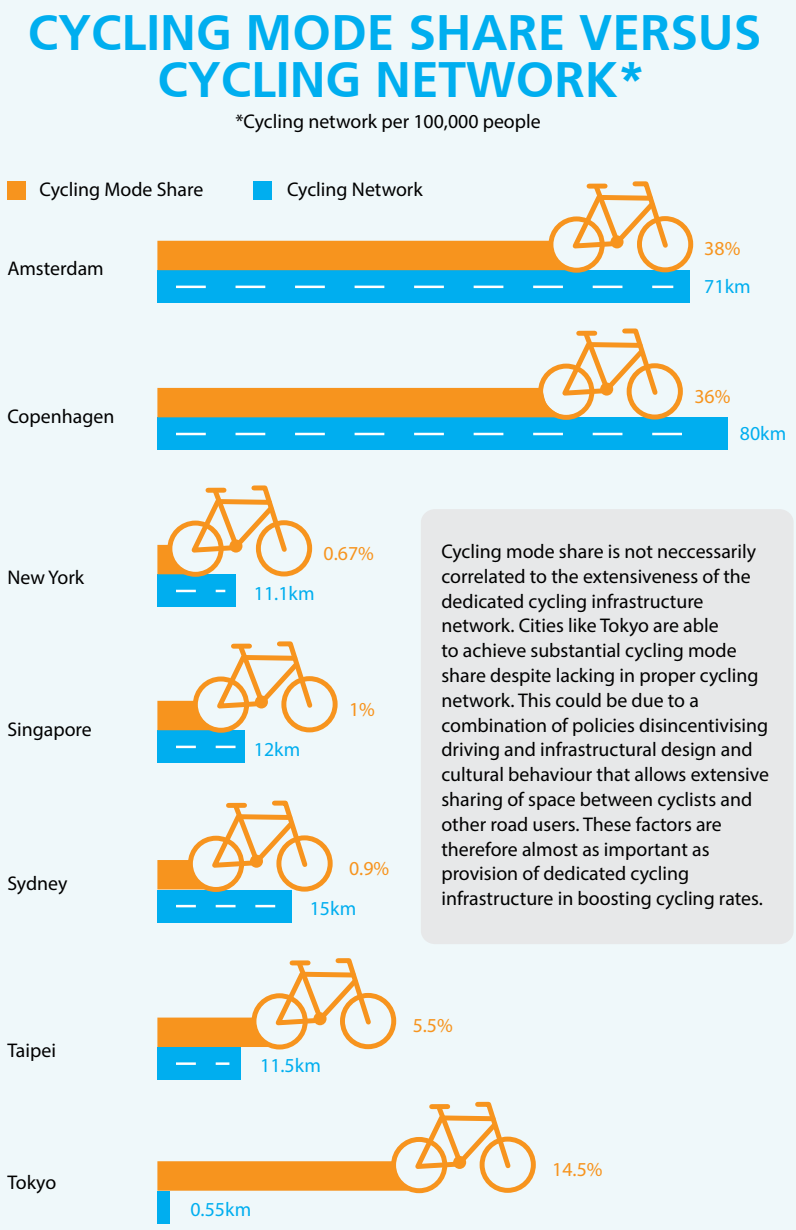
Active mobility presents multiple benefits and is becoming increasingly important for enhancing liveability in our urban environment. Cities can thus be designed to further support walking and cycling, instead of prioritising cars. The Centre for Liveable Cities and Urban Land Institute embarked on a joint study in 2014 on "Creating Healthy Places through Active Mobility". The study, which culminated into a publication of the same name, distilled ten design principles for making cities more walkable and bikeable. **Remy Guo** elaborates.

A Paradigm Shift Towards Creating Cities for People

In order for cities to become walkable and bikeable, a fundamental change is needed in how they are designed. This calls for nothing less than a paradigm shift away from the motorist-centric urban planning prevalent in the last century. A new design ethos is required, prioritising the safety and needs of pedestrians and cyclists.

But giving greater priority to these more vulnerable road-users does not mean that drivers' needs should be overlooked. Each street has its own context, and the priority given to different road-users should vary to reflect this. For instance, on residential or downtown streets, the 'soft traffic' created by pedestrians and cyclists should be prioritised over motorised traffic. On highways with fast-moving traffic, motorised traffic should take precedence. This approach allows for a greater diversity of mobility options.

Each street has its own context, and the priority given to different road-users should vary to reflect this.



More Than Just Bicycle Lanes and Footpaths

The notion of walkable and bikeable cities is often equated with the provision of bicycle lanes and wider sidewalks. However, a comparison of cycling rates and total cycling networks in cities across the world shows that infrastructure provision alone does not always result in a higher incidence of active mobility. For instance, while the leading cycling cities of the world – Copenhagen and Amsterdam – are well provided with dedicated cycling infrastructure and high cycling rates, the popularity of cycling is high in cities like Tokyo, where similar infrastructure is lacking. This suggests that other factors can be just as important in contributing to a successful cycling culture.

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Ten Ideas to Make Cities More Walkable and Bikable

1. Make it Convenient and Efficient

A comprehensive and well-connected network of footpaths and bicycle lanes makes door-to-door travel more convenient and efficient. Fenced developments should be discouraged to minimise unnecessary detours for pedestrians and cyclists. In Singapore, through-block links are stipulated as a condition for certain land sales to ensure round-the-clock pedestrian corridors through these developments. This promotes connectivity within the city.

Public transit systems should make it as convenient as possible for people to complete their journeys on foot or bicycle. Effective cycling connections can be a viable alternative to last-mile challenges

01 YouBike, Taipei City's bicycle sharing system.

02 Ease and flexibility in transferring between different modes encourage active mobility.

03 Through-block links in Singapore, such as this one in Bugis, provide 24-hour pedestrian corridors through developments, e.g. from a Mass Rail Transit (MRT) station through a shopping mall. This enhances convenience for the commuter.

and can help alleviate the need for bus feeders at rail transit stations. For a hot and humid tropical city such as Singapore, good transit integration can encourage people to cycle for the first or last legs of longer commutes which may be too uncomfortable to complete by bicycle.

For cities that are starting to promote active mobility, a well-conceived bicycle sharing system can be effective, by providing convenient access to bicycles for short-distance trips as an alternative to motorised modes of transport.

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2. Provide Dedicated Spaces for All

To encourage more people to adopt active mobility and enhance travel efficiency for all road-users, dedicated infrastructure in the city is essential. The provision of dedicated infrastructure has also been shown to generate tangible results in increasing walking and cycling rates and – if implemented correctly – enhancing safety for all road-users. In New York, the fivefold increase in its cycling network from 119 miles to 561 miles between 1997 and 2009 corresponded with a 221% increase in commuter cycling rates. The popularity of cycling later increased by another 29%, following a further 42% increase in the cycling network.

3. Ensure Visibility at Junctions

Accidents often occur when pedestrians and cyclists are caught in the blind spot of a driver's peripheral vision. Junctions are particularly problematic because drivers have to look out for oncoming vehicles in addition to pedestrians and cyclists before proceeding. In the Netherlands, this is addressed by designing junctions and roundabouts with ample space to allow drivers to stop if necessary to avoid pedestrians and cyclists.

Cyclists generally travel at higher speeds than pedestrians, so drivers have less time to react if they encounter a cyclist unexpectedly. Painted cycling lanes can help to direct a driver's attention to the presence of cyclists. However, such lanes are best limited to danger areas such as junctions, in order to retain its intended impact.

01 Painted cycling paths at junctions in Copenhagen increase visibility.

02 Dutch junctions are designed to optimise continuous movement for cyclists.

03 Continuous sidewalks in Copenhagen.

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4. Maintain Continuity of Movement

Pedestrians and cyclists often find their journeys interrupted by traffic junctions. This reduces travel efficiency and can also make journeys irksome, particularly outdoors in the tropics.

In the Netherlands, junctions are designed to provide a high degree of continuous movement for cyclists. This is achieved by continuing cycling lanes through junctions in the form of bicycle crossings, and also by consciously creating gentle bends in the cycling lanes around junctions. Sharp bends that require cyclists to stop or slow down are avoided. Protected cycling lanes and junction designs allow cyclists to cycle through red lights safely, minimising the number of stops a cyclist has to make.

Continuous sidewalks in cities such as Copenhagen and Amsterdam challenge the typical hierarchy between cars, pedestrians and cyclists at minor intersections. Instead of pedestrians and cyclists having to stop and watch out for cars, continuous sidewalks require cars to stop and watch out for pedestrians or cyclists before moving through an intersection. This prioritises the right-of-way for pedestrians and cyclists at minor intersections and slip lanes, allowing for greater continuity of movement.

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5. Keep it Slow

To make comfort and safety a priority for pedestrians and cyclists, motorised traffic speeds have to be kept low, especially in areas with high foot and bicycle traffic. In Tokyo, speed limits are heavily regulated: on smaller neighbourhood roads speeds are capped at 20 kilometres per hour to 30 kilometres per hour. This allows pedestrians and cyclists to share these roads even without dedicated cycling lanes or footpaths. Speed limits are also prominently painted on the road, prompting drivers to slow down, giving them more time to react if necessary.

The benefits of slower street traffic are best exemplified by the Netherland's *woonerf*, or living streets, where traffic-moderating features are designed to limit speeds in residential areas to 12 kilometres per hour. This allows cars, cyclists and pedestrians to share the streets safely.

Shared streets are also common in Asian cities where traditional street stalls are common. The constant high volume of pedestrian traffic through such streets forces cars to slow down despite the lack of traffic-moderating design interventions. In the absence of street kerbs, these areas also allow for pedestrians and cars to negotiate for space in a flexible manner without compromising on safety, since motorised speeds are kept low.

...motorised traffic speeds have to be kept low...[t]his allows pedestrians and cyclists to share these roads even without dedicated cycling lanes or footpaths.

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6. Prioritise At-grade Crossings

People tend towards the path of least resistance. Making crossings simple and direct minimises the effort required for pedestrians and cyclists to complete their journeys and enhances the continuity of movement. Overhead bridges and underpasses, especially at non-arterial roads, can create 'mini-highways' that inconvenience pedestrians and cyclists.

In Seoul, efforts have been made in recent years to make the city more pedestrian-friendly. In its Gwanghwamun Pedestrian Belt, underpasses have been replaced by at-grade crossings to create direct connections for people. Doubly wide pedestrian crossings are also commonly found in Seoul, allowing crowds to cross the road comfortably.

Many high-density cities, such as Tokyo and Taipei, have diagonal crosswalks that bring all motorised traffic to a stop at junctions with high pedestrian volumes during peak periods. This enables safe and direct crossings for pedestrians and cyclists alike.

People tend towards the path of least resistance. Making crossings simple and direct...enhances the continuity of movement.

7. Ensure Consistency in Design Standards

Consistent design standards and traffic codes throughout the city can help road users anticipate traffic conditions. For example, consistently locating bicycle lanes on one side of the road helps pedestrians and cyclists easily recognise designated paths. Drivers will also be able to anticipate the direction from which cyclists may approach, reducing road accidents. Signage systems should also be rendered more consistent and user-friendly and help to communicate traffic conditions.

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01 Shared street in 's-Hertogenbosch, the Netherlands.

02 Shared street in Taipei.

03 Scramblewalk in Shibuya, Tokyo.

04 Diagonal crosswalk in Taipei.

05 Consistent design standards in Copenhagen make the system intuitive.

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8. Make it Comfortable and Appealing

As pedestrians and cyclists are exposed to the elements, addressing weather conditions is vital for making active mobility more comfortable and appealing. In Copenhagen, cycling tracks are cleared of snow before roads in winter, to enable cycling even during inclement weather.

In hot and humid Singapore, an extensive programme to plant large shady trees along the streets has helped make walking and cycling much more comfortable and appealing.

...addressing weather conditions is vital for making active mobility more comfortable and appealing.

9. Mixing Up the Uses

Studies show that compact, mixed-use urban environments can encourage people to walk and cycle. Mixed-use developments can reduce the distance of daily commutes and provide convenient access to essential goods and services. With a greater variety of activities and services, such environments can create a more engaging journey for walking and cycling. This also promotes social interaction and increases traffic for local businesses, helping to reinforce the positive aspects of walking and cycling within a community.

01 Snow clearance for cycling lanes in Copenhagen ensure that cycling is possible in winter.

02 Trees planted along sidewalks help provide shade to pedestrians and cyclists.

03 The Toa Payoh Town Centre in Singapore, which provides a variety of goods and services to the Toa Payoh residential district.

10. Close the Loop with End-of-Trip Amenities

End-of-trip amenities contribute significantly to the convenience and comfort of active mobility. Research on commuting behaviour in Washington D.C. has shown that the provision of showers, lockers and bicycle parking at work can increase the likelihood of people cycling to work by almost five times. In tropical cities, the heat and humidity make shower facilities and drop-and-go laundries at workplaces even more crucial to reduce discomfort after walking or cycling to work.

End-of-trip amenities are generally best integrated with destination developments. Building and planning guidelines, as well as green building certification programmes such as the Leadership in Energy & Environmental Design (LEED) programme in the United States, or the BCA Green Mark scheme in Singapore, can encourage developers to provide adequate bicycle facilities. The Australian city of Brisbane is one of the most proactive in providing such amenities. Its Cycle2City commuter cycle centre, completed in 2008, offers secure bicycle parking spaces, lockers, showers, fresh towels and spare bicycle parts in Brisbane's CBD for a fee of between A$5 to $7 per day. Bicycle parking is commonly provided as a public amenity.

In Tokyo, innovative underground public parking carousels can be found at train stations. Their Eco Cycle system lets cyclists deposit their bicycles at ground level. These are then taken underground by mechanical lifts and stored for protection against the elements and theft. The system also thereby eliminates bicycle clutter from street level, freeing up more space for pedestrians and public activities – a boon for high-density cities scarce on space.

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Remy is Senior Assistant Director at the Centre for Liveable Cities, where he is involved in planning and development related research. Prior to joining CLC in 2013, Remy was a practicing urban designer and architect in the private sector, and completed various local and overseas projects ranging from district level master plans, urban design proposals, to architectural construction projects.

Download the e-version of this book at:

http://www.clc.gov.sg/documents/books/active_mobility/index.html

A More Walkable
SINGAPORE

While Singapore is known as a City in a Garden, it is not quite known as a walking city, unlike Paris or Tokyo. Current initiatives by both the public and private sectors, however, indicate growing interest in creating more space for pedestrians.

The motivations for these projects are varied, such as promoting public places and revitalising streets. Nonetheless, the results consistently show that a city that is pedestrian-friendly is a liveable city. **Nicole Chew** from the Centre for Liveable Cities shows how in this photo essay.

Queen Street Makeover

The Bras Basah and Bugis (BBB) precinct has been earmarked to be an arts and cultural district. Located in the middle of the busy Central Business District, Singapore's urban planning agency, the Urban Redevelopment Authority (URA), understands that providing ample pedestrian-friendly space also helps to cater to outdoor arts events and is crucial for promoting the arts scene.

Termed the "Queen Street Makeover", kerbside parking lots along a stretch of Queen Street were removed to create expanded sidewalks of up to 10 metres. In other areas of the BBB precinct, the sidewalks in front of the Singapore Art Museum at 8Q were also extended to create more public space for holding events.

Benches colourfully decorated by art and design students of the nearby Nanyang Academy of Fine Arts make the area vibrant and more public-friendly.

Park(ing) Day 2014

To encourage people to find ways to improve and activate public spaces, the URA supported Park(ing) Day 2014 in Singapore.

Initiated by Re(bar), a design company in San Francisco in 2005, Park(ing) Day is an annual worldwide event where citizens convert parking lots into spaces for alternative, non-commercial use. The result is a fun, interactive event that demonstrates how spaces set aside as parking lots can benefit the public in more holistic ways, and invites conversation of how urban planning can better serve its citizens.

This year, Singapore joined more than 160 cities in 35 countries to participate in Park(ing) Day. The event saw parking lots revamped into mini parks and game stations that brought strangers together on a busy work day.


PARK


COME PLAY
WITH US!

Streets such as Ann Siang Road, Club Street and Haji Lane are closed regularly to automobile traffic on weekend evenings to allow food and beverage establishments expand their space onto the streets. During these times, the streets come alive with buzz and activity. This arrangement is so popular that there have been requests to extend the hours of the road closures, or to close the roads altogether.

Car-Free Weekends (Haji Lane)

Car-Free Weekends (Ann Siang Road and Club Street)

Orchard Road's Pedestrian Nights

The link between footfall and retail sales continues to be explored in Singapore. In attempts to revitalise the area, a series of Pedestrian Nights is held on Orchard Road, one of Singapore's major shopping districts. Initiated by the Orchard Road Business Association, a part of Orchard Road is closed to automobile traffic one Saturday evening a month, from October 2014 to March 2015. In its place, mass events such as tennis and yoga clinics, as well as musical performances, are held on the streets. The public also enjoys the freedom to roam along one of Singapore's busiest streets.

The busy streets of Copenhagen.

COPENHAGEN

In combatting climate change, cities are right on the frontline. **Frank Jensen**, Lord Mayor of Copenhagen since 2009, shares how the capital and most populous city of Denmark is leading the charge by investing in initiatives to enable half its residents to cycle every day by 2015, and to become the world's first carbon-neutral capital by 2025. The city also actively incorporates green solutions in its development, and as recognition for their efforts in this area, Copenhagen was elected European Green Capital in 2014.

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More than half the world's population lives in cities, and cities discharge three-quarters of all CO_2 emissions. Mayors all over the world are responsible for more than just dealing with the effects of climate change; they hold the keys to preventing it from getting worse.

In Copenhagen, we face the dual challenge of a rapidly growing population and limited space to build. Intelligent urban planning is essential to prevent a massive increase in CO_2 emissions when the city's population is projected to grow 20% in 10 years.

The city of Copenhagen is rising to the challenge and taking it a step further: by 2015, half of Copenhageners will cycle every day. By 2025, Copenhagen will

be the world's first CO_2-neutral capital. Indeed, Copenhagen seems to be making good progress: CO_2 emissions are down 40% since 1995. The rest of the gains will be made by installing 100 new wind turbines, expanding the public transport system and converting power stations from fossil fuels to biomass.

Promoting cycling and walking also plays an important role in reaching these goals. Besides experimenting with more sustainable collective transport such as electric buses, the city's planners are working hard to make cycling the first choice for Copenhageners to get around the city.

01 & 02 Copenhagen's public transport system such as 02 the Copenhagen metro and 01 the Copenhagen electric buses provide Copenhageners with greener transportation options.

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But how do you get people to choose the bike instead of the car in a country like Denmark, where the rainy months might be a motivation-killer? Through urban planning, bikes are made a convenient and fast alternative. Studies show that every time a cycle track is built on a road, 20% more cyclists and 10% fewer cars use that stretch. Currently, there are more than 450 kilometres of cycle tracks, cycle lanes, green cycle routes and cycle super-highways, and the network of cycle tracks is constantly being expanded.

The Copenhagen Cycle Track Priority Plan states the order in which almost 70 km of new cycle tracks and lanes will be built. With new bike lanes and projects such as cycle super-highways to the suburbs, cycling has been made a greater option over driving. For example, the *Cykelslangen*, or Bicycle Snake, is a new bicycle-bridge that makes it possible to cycle between two very busy parts of Copenhagen in no time and with a beautiful view of the harbour. It makes the cycle ride even more pleasant for the 11,500 Copenhageners who cross it every day to and from work or school.

01 The *Cykelslangen*, or Bicycle Snake, Copenhagen's newest cycling bridge.

02 An aerial view of Copenhagen.

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The result of these efforts is that, currently, 41% of Copenhageners cycle to work or school every day – each contributing to making Copenhagen greener and more liveable. This is an important investment in the future. Building up a bicycle infrastructure does more than just reduce CO_2 emissions and make more people cycle to work. It leads to improved individual health and lower medical costs, which can be measured at the bottomline.

Initiatives like these cannot be accomplished by a city council alone. They require a great deal of involvement by residents and partnerships with businesses. The focus on creating a city that is not just green and liveable but also has a vibrant economy has made Copenhagen the European Green Capital 2014. Sharing solutions among businesses, residents and other cities is the primary focus for the city in its year as the Green Capital.

The crucial role cities play in the effort to reduce CO_2 emissions needs to be acknowledged. By sharing best ideas and solutions, Copenhagen can go from great solutions locally to brilliant advances globally.

This is why Copenhagen is working with cities globally to find new sustainable solutions and share the ones the city already has in place. For instance, Copenhagen is deeply involved in the work of the global city network C40 to implement sustainable initiatives to help address climate change.

Besides being in the C40 Steering Committee representing 19 other innovative cities, Copenhagen is also leading the C40 Green Growth Network, which seeks to develop new ways of creating sustainable urban solutions combined with economic growth. Such networks have paved the way for important collaborations. For instance, an agreement signed in 2014 with the city of Milan will see companies from Copenhagen offer green solutions to help the Italian city become more cyclist- and pedestrian-friendly.

Cities can resolve specific problems on the ground, and are responsible for putting strategy into action. With the experience required to tackle problems locally and globally, cities hold the keys to a sustainable future. In managing climate change, cities are truly right on the frontline.

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Frank Jensen has been the Lord Mayor of Copenhagen since 2009. He strives to create an even more liveable city with room for everyone. He believes economic growth and environmental sustainability should go hand in hand. The incorporation of green solutions in Copenhagen's development is one of the reasons why Copenhagen was elected European Green Capital in 2014. Frank Jensen was President of Eurocities in 2010-2012 and has been a member of C40's Steering Committee since 2014.

01 A typical day on the streets of Copenhagen.

Singapore – the World's First TROPICAL CYCLING CITY?

The Centre for Liveable Cities and the United States-based Urban Land Institute jointly studied active mobility in many cities on a research project entitled "Creating Healthy Places through Active Mobility". The project, partly funded by the ULI, resulted in a book of the same name launched in Singapore and New York in October 2014. As part of this project, CLC Director **Limin Hee** moderated a roundtable panel featuring **Camilla van Deurs**, Partner at Gehl Architects; **Scott Dunn**, Vice-President and Director of Development at AECOM; **Cliff Lee**, Director (Physical Planning, Infrastructure) at the Urban Redevelopment Authority; and **Kenneth Wong**, Director (Local Planning) at the Land Transport Authority. The following is an edited transcript from the roundtable, highlighting the key points of the discussion.

Camilla van Deurs, Gehl Architects.

LH Limin Hee
CVD Camilla van Deurs
SD Scott Dunn
CL Cliff Lee
KW Kenneth Wong

LH: In cities like Copenhagen, walking and cycling make up more than half the transport modes. Cycling in Singapore merely makes up 1 to 2%. How did Copenhagen build up such a successful cycling culture?

CVD: One key to success is a very fine-grained network. Bicycle lanes were always first to be built. They were about everyday movement, not recreation; not about exercise, but an equal form of urban transportation. Another success factor is the "people-first design". Cars have to give priority to bicycles and pedestrians. We go into little details: like giving the right of way to cyclists to turn right at a green light, or timing all intersections so a bicycle going at 18 to 20 kilometres an hour has a green wave through the city. There are signs saying, "Hello Cyclists, please relax and thank you for cycling", little footrests when you're waiting, even dustbins angled to fit bicyclists riding by.

70% of cyclists do so even in winter, because bicycle lanes are cleared first. It's not only hardware – you must also work with the software – culture, maintenance and cleaning crews. You can also take your bicycle on the train, waterbus or metro for free. Then it's easy to commute over longer distances, because there is complete inter-travel mobility. Even on taxi – by law, you are required to take two bicycles on your taxi.

Why do we cycle in Copenhagen? Every year, the city asks people why. It's not really because we care about the environment – only 1% do. Is it because we're afraid of getting fat? Partially. But 61% of us cycle simply because it is the fastest, most convenient way of transporting ourselves. That really is the key to our success. We must make cycling the first and easiest choice.

Limin Hee, Centre for Liveable Cities.

61% of Copenhagen people cycle because it is the fastest, most convenient way of transport...We must make cycling the first and easiest choice.

Camilla van Deurs, Gehl Architects

● **LH: How do you think cities can start, because moving away from the car-based transportation model might be the hardest step? Being a Johnny-Come-Lately in cycling culture, how did New York get started?**

CVD: Copenhagen has more than 350 kilometres of bicycle lanes, and it took us 50 years. New York created more than that in a mere three years. So, you do not have a disadvantage if you start late. You can definitely still win the race.

New York started when Mayor Michael Bloomberg appointed Janette Sadik-Khan as traffic commissioner. He wanted a "Greener, Greater" city, and wanted to promote active mobility. Pilot projects allowed New York to get results out on the streets quickly, and create a big, cohesive network. That's key because if you can't rely on it to get from A to B, then you can't trust the system. That's what New York did successfully: get the infrastructure in first.

● **LH: What are we doing to get started in Singapore?**

CL: I think we pale in comparison with Copenhagen. We are quite road- and public transport-oriented. Public transport will be the backbone of our transport system, so we need to also see how walking and cycling can be integrated into one ecosystem. Government agencies thus need to work together to enhance the first and last mile

However, we're not starting from a clean slate either. Our park connectors are 200-over kilometres in distance. Now, how do we connect all these towns together, and bring people into the city centre?

Singapore's National Cycling Plan aims to facilitate cycling as a safe, convenient option. We will start off with off-road cycling, and aim to create 700 kilometres of cycle paths island-wide, hopefully by 2030. This is a multi-agency effort, with the Land Transport Authority (LTA) taking care of intra-town cycling, National Parks Board (NParks) in charge of park connectors, Public Utilities Board (PUB) covering up drains to gain that space, JTC Corporation (JTC), Housing and Development Board (HDB), Sport Singapore (Sport Sg), Health Promotion Board (HPB), Traffic Police (TP), and cycling enthusiasts. With this network in totality, we will have a better chance to get more people to cycle.

> *Singapore's National Cycling Plan...will start off with off-road cycling, and aim to create 700 kilometres of cycle paths island-wide.*
>
> *Cliff Lee,*
> *Urban Redevelopment Authority*

Kenneth Wong, Land Transport Authority.

Cliff Lee, Urban Redevelopment Authority.

A lot of things can be done within HDB housing estates...By 2030, all towns will have cycling networks.

Kenneth Wong,
Land Transport Authority

KW: In our off-road cycling network, we're looking at dedicated, bi-directional paths of about 2 metres wide. Where we need to share the path, we will probably increase this to about 2.5 metres. Safety is our number one consideration. For example, we will have to push the stop lines back for motorists and create more space for cyclists to cross safely. We will also have to undertake a review of traffic junctions to reduce accidents. Another issue to review is the range of personal mobility devices that is becoming very popular in Singapore, such as e-scooters.

A lot of things can be done within our public housing estates. All of our housing estates have at least one Mass Rapid Transit (MRT) station, so it is quite viable to consider the first- and last-mile connectivity to stations. There are 26 towns today; with more still being planned. By 2030, all towns will have cycling networks.

CL: We want to make cycling convenient and seamless. Thus for cycling facilities, bicycle racks are very important – at transport nodes, developments and living environments. Our public housing board, HDB, has been providing one rack for every 10 units. This will go up to one in every six units.

KW: We have over 11,000 racks at MRT stations, and more will be built. The Thomson Eastern Region Line will have underground bicycle racks and parking spaces. We are also really keen to pilot a bicycle sharing system, perhaps in the Jurong Lake District.

LTA has also put up the Walk-to-Ride framework, looking at providing about 200 kilometres of sheltered connectivity by 2018.

CL: Walkability is important because we are moving towards a rapidly ageing population. We want it to be convenient, safe, comfortable, delightful, not just for the mobile but those less able as well, and for all ages. We need to do some auditing in all our housing areas – the pavement, potholes – all the small things.

Scott Dunn, AECOM.

Being in a dense city helps because you don't need to travel far to have access to amenities.

Cliff Lee, Urban Redevelopment Authority

01 Panellists Camilla van Deurs (left), Scott Dunn (centre) and Cliff Lee (right) at the Active Mobility Roundtable.

LH: A lot of successful examples of cycling seem to be in temperate countries. How can we encourage cycling in tropical weather?

SD: In our joint study, we identified 10 design factors that would promote active mobility. Number one was making it easy and convenient. A lot of design work we're doing in major metropolitan areas is on connecting those facilities, and linking the last kilometre.

Urban design can also enhance the comfort of cyclists and pedestrians. We have more buildings that are taller, and there's a lot of wind that comes down from the buildings that helps cool you. So we can use building form to bring the wind down to street level. This will be a new idea in terms of using a city's urban design, and with density you have the ability to do that.

LH: Are any things going for Singapore that would help to encourage cycling even in tropical weather?

CL: When we drafted the urban planning Master Plan 2013, one survey on cycling did feature that climate is a strong deterrent. But our NParks colleagues have lined trees along all roadsides, so that provides shade, and LTA is working towards providing covered linkways within 400 metres of transport nodes. All these will enhance active mobility for that first and last mile.

Being in a dense city helps because you don't need to travel far to have access to amenities. Our land-use planning is based on self-sufficient towns and higher-intensity developments, so people do not need to walk as far to go to school, pick up groceries and so forth.

KW: We live in a tropical country, so we need to be prepared to perspire at some part of our journey. Someone once said, "There's no such thing as bad or wrong weather, it's just wrong clothes." Are you dressed appropriately? Are you in the right spot? I think Singapore is one of the first tropical countries to roll out a national cycling plan. This will provide that first-mile, last-mile connectivity to our public transport system, which will remain the backbone of our transport system.

● **LH: Camilla, you have worked in very hot climates to provide cycling infrastructure and design. What is your comment about the weather?**

CVD: We've done some work in Zambia, Africa, Oman, and Mexico City. None as humid as Singapore – that's one big difference. In a hot climate, besides wind and shade, it's also about distance. Singapore is in this fantastic situation where you have a very compact city, relatively flat, so it is very possible to have cycling even though it's tropical. But it's also a question of a mindset shift. Is it only for the hipster, the bicycling fanatic on Sundays, the very poor, or for everyone at all times?

● **LH: Which one has to come first, then – mindset change or infrastructural change?**

KW: Infrastructure has to come in first; to encourage people that it's safe.

SD: Primarily infrastructure. Just the ease of use – if it's not easy, people won't do it.

CL: In Singapore's context, infrastructure needs to be in place – before we can even talk about safety and convenience – to encourage people to cycle.

CVD: Yes, safety first. For an ageing population, safety is a great concern for them to go onto the streets. If we're going to have active mobility even into a ripe age, we need to have good amenities.

KW: At the same time, infrastructure is just one piece of the puzzle. We rolled out the National Cycling Plan, but other pieces need to come together, including education. We have a diverse group of users on the road – the young, the elderly, locals and foreigners.

Education requires a lot of coordination among agencies. We need an approach where we can reach as many diverse groups in a targeted manner as possible. We also don't quite have a culture of cycling in Singapore. If we want cycling to be an active transport mode, we need to work with the education ministry to find ways to teach our children. We have to start young.

01

CL: There is still a fair bit of conflict between pedestrians and cyclists. A code of conduct will be very useful to get everybody to better understand each other's needs, and be more gracious to other users of the same space.

SD: The mayor of Kuala Lumpur has been focusing on raising awareness. The idea of a car-free KL has been very successful. He started with the first Sunday of the month. Downtown roads are closed for four hours, and all types of non-motorised transportation are allowed, so you can walk, run, skateboard, roller-blade, in front of the KL Convention Centre. It has become very popular. The mayor's now going to two Sundays a month.

Is it just about efficiency – moving enough people given the given amount of space – or is it about other goals, like enhancing liveability?

Kenneth Wong, Land Transport Authority

LH: What is one word that describes the roadblocks to implementing active mobility, and how can we overcome them?

KW: Space, and trying to prioritise the different groups of users. We have to cater to cyclists, pedestrians, motorists, commuters on the bus, but also have to consider space for greenery, which is something we treasure.

LH: That's because you didn't take any space away from the road.

KW: It's about moving people optimally. Mass public transport is still the most efficient – a train can move up to 1800 people at high speeds. But we also need to consider users moving at different speeds: pedestrians move at perhaps four kilometres an hour, and the elderly even more slowly. The issue is optimising space while considering speed, velocity, and mass. We're just trying to balance the use of space between different groups of people. That said, we probably have to rethink on who should have priority of the space. Is it just about efficiency – moving enough people given the given amount of space – or is it about other goals, like enhancing liveability?

● **CL:** Investment, which is also about allocating necessary infrastructure in a dense environment.

In the past, we invested heavily in road infrastructure, and less in walking and cycling infrastructure. We need to reassess if this is worth investing in, but I do sympathise with Kenneth about space, as this often surfaces in inter-agency discussions. If we want to squeeze in a two-metre cycling track within six and a half metres of space, something has to be compromised, either in terms of less greenery, or less road space.

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> *We have to decide when to take that courageous first step... Singapore...has the ability to do it.*
>
> *Camilla van Deurs, Gehl Architects*

● **SD:** Co-operation. Urban mobility is one of the most important things in city planning, and it takes co-operation by everybody to make mobility easy and convenient for as many different users as possible. I've seen a dramatic change in the way Singaporean agencies work together on land use issues since I've moved here in 2007.

● **CVD:** Courage. We have to decide when to take that courageous first step, because we cannot keep expanding at the current rate. There's simply not enough space and resources in our world. Singapore is a country that has previously shown courage to implement vast systems in short amounts of time, and I think has the ability to do it.

01 Panellists Cliff Lee (left) and Kenneth Wong (centre) at the Active Mobility Roundtable, moderated by Limin Hee (right).

...walkable, convenient and safe... those are the key factors in building an attractive community.

Scott Dunn, AECOM

LH: What roles can various sectors play to build a culture of active mobility?

CVD: In Copenhagen, the police force worked with immigration services and job employment services to teach immigrant women to cycle as part of job training. So they become independent, and can go and apply for a job.

SD: Real estate aims to create places that people are happy in. We're starting to see a lot of green and blue connections being marketed as the main thrust behind developments such as the River of Life project, at the centre of Kuala Lumpur, along the Klang Valley and Gombak River. Almost every major project along the river is being branded as walkable, convenient and safe. And those are the key factors in building an attractive community.

CL: For the Club Street and Haji Lane road closures, planners worked with local businesses. We want them to take ownership of the road closures, so that it's more sustainable. We've received feedback that businesses have improved, and customers feel much safer walking in those areas. Some of the stakeholders have even requested extending the hours of closure and making it more permanent.

KW: We should encourage building owners to provide cycling facilities, such as bicycle racks. Many of us live in public housing estates; how do we get our bicycles up the lifts and into our storerooms? For design, we need an end-to-end perspective.

The other challenge is retaining greenery and streetscapes. There are also traffic considerations depending on local configuration. To make any changes, we will need a lot of buy-in from communities and landowners.

Our Travel Smart Network is aimed at mitigating demand for transport, but also includes a grant to incentivise companies to install bicycle parking and shower facilities.

● **LH: One last question. How many years would it take before Singapore can become a cycling nation?**

CVD: Twenty.

SD: By 2050

CL: As a planner I'll be a bit more optimistic. By 2020

KW: I mentioned a plan for 2030 so I'll gun for 2030, which is in about 15 years.

● **LH: I'm very glad to hear that our local agencies are more optimistic than our foreign experts. I think that's a good note on which to end this panel.**

Watch the full lecture:

https://www.youtube.com/watch?v=l5MaqsiMMmw

01 Panellists at the Active Mobility Roundtable, moderated by Limin Hee (right).

Temasek Foundation Leaders in Urban Government Programme

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Ms Usha Rao-Monari
Global Head, Water & Waste Infrastructure & Natural Resources, IFC, World Bank Group

past participant

" We came up with the CBS catchphrase in Singapore. After returning to Kuching, we conducted more workshops, and then further developed the plans. So you can say that it was 'Made in Singapore, Born in Kuching' "

Mayor Datuk Haji Abang Abdul Wahap, credited TFLUGP with helping to improve their Clean, Beautiful and Safe (CBS) Enhancement Plan 2013–2017, a five-year plan for Kuching North.

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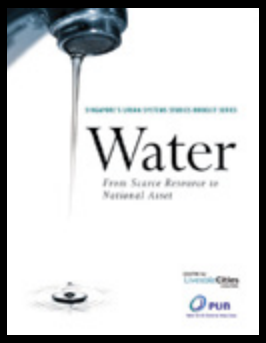

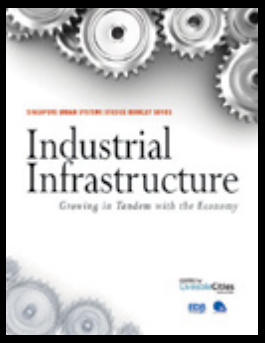

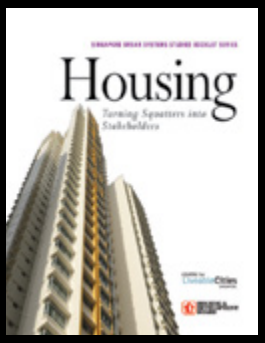

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