

SOLUTIONS ^{No 1}

MONDAY • 11 July 2016



WCS Young Leaders Symposium

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Tackling tomorrow's foremost urban challenges with the wisdom of today's young leaders



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PWN Technologies' CEO on the water industry's most pressing challenges and future solutions



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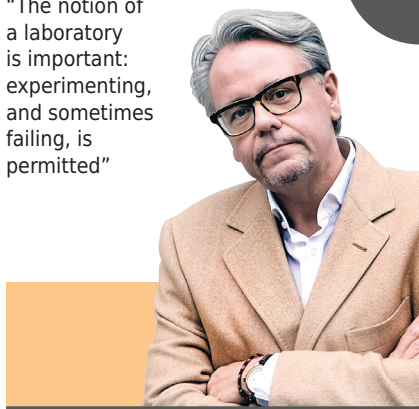
How residents, businesses and the private sector can spur recycling uptake



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"The notion of a laboratory is important: experimenting, and sometimes failing, is permitted"



LIVE COVERAGE @ Sands Expo & Convention Centre, Marina Bay Sands, Singapore

INNOVATION AND RESILIENCE KEY TO THE CITIES OF THE FUTURE

Liveable, resilient cities require innovative urban solutions, says Dr Tony Tan

By Joseph Jones



The Climate Action Plan marks the steps that Singapore is taking to reduce its carbon emissions intensity by 36% by 2030

Singapore skyline

Singapore President Dr Tony Tan used the joint opening of the World Cities Summit, the Singapore International Water Week and the CleanEnviro Summit Singapore to announce the release of Singapore's Climate Action Plan. The Climate Action Plan marks the steps that Singapore is taking to reduce its carbon emissions intensity by 36% by 2030, as well as the city-state's plans to strengthen its resilience to climate change. A key component of this plan is power generation. "We will reduce emissions from power generation, by raising solar power in our system to 350 megawatt-peak by 2020," said Dr Tan. This would constitute about 5% of Singapore's expected peak electricity demand.

This pledge to tackle climate change and build resilience reflects a broader, global trend: cities

must cope with complex urban situations – and environmental challenges are a top priority. "We have seen floods deluge cities in Europe, monster storms affect several Australian cities and heat waves hit cities in India," said Dr Tan. To cope, he argued that civil authorities must embrace innovative urban solutions and resilience to build liveable and sustainable cities – which the co-located events aim to provide a platform for.

In Singapore's case the city-state is facing a changing climate that is likely to produce higher temperatures, more intense and frequent heavy rainfall, more pronounced dry

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TOP HONOURS FOR INNOVATION

By Jennifer Eveland



Professor John Anthony Cherry

The winners of the 2016 Lee Kuan Yew Prizes announced

This year, the Lee Kuan Yew Water Prize and the Lee Kuan Yew World City Prize have been awarded to Professor John Anthony Cherry and the city of Medellín, Colombia, respectively, in recognition of their exceptional contributions to sustainable water management and urban development.

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REDUCE, REUSE AND RECYCLE

The 3R Packaging Awards

The Singapore Packaging Agreement (SPA) was inaugurated in 2007 as a platform for the industry to collaborate with government and non-governmental organisations (NGOs) to reduce packaging waste. The 3R Packaging Awards are given out annually to recognise SPA signatories who have made

► Continued on P2

DAILY HIGHLIGHTS

Sands Grand Ballroom D-E, Level 5
IN CONVERSATION & JOINT OPENING PLENARY
9.00-12.45

LEE KUAN YEW PRIZE AWARD CEREMONY & BANQUET
18.00-22.00

Sands Grand Ballroom D-E, Level 5
LEE KUAN YEW PRIZE LECTURE AND LEE KUAN YEW WORLD CITY PRIZE FORUM
13.45-15.15
15.30-17.00

Expo Hall F, The Oasis, Basement 2
HYDRO PITCH DAY
15.00-18.00

Expo Hall, Level 1
ENVIRONMENT @ CITY SOLUTIONS SINGAPORE
9.00-18.00



INNOVATION AND RESILIENCE KEY TO THE CITIES OF THE FUTURE

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Singapore President Dr Tony Tan welcomed delegates to the joint summits and called for an open exchange of ideas and learnings

seasons and higher sea levels. Constrained by its lack of resources, Singapore has had to innovate to overcome its challenges. This is epitomised by the investment in water research and development.

"At independence, Singapore was a rapidly urbanising city that faced a plethora of water challenges, including scarcity and pollution," said Dr Tan. To counter this, Singapore has invested in NEWater (high-grade reclaimed water) and desalination. He added, "Singapore's fifth NEWater factory will be completed this year, and two additional desalination plants will be completed in the next four years. These investments will boost our water supply capacity from alternative sources to 85% by 2060."

This approach to both water and climate change fits within the Sustainable Singapore Blueprint, said Dr Tan. This broad framework to sustainable development prioritises five key thrusts: building "eco-smart" towns, going "car-lite", workings towards a zero-waste nation,

pushing for a leading green economy, and encouraging civic participation for an active and gracious community.

Aside from tangible policies, there are other softer aspects of a city. "A city is also very much about its people, its history, artistic expression, way of life and character – in other words, its culture," said Dr Tan. He argued that this intangible aspect is critical in binding urban populations together. "For Singapore, racial and religious diversity is a hallmark of our culture, and our ability to preserve social harmony is a key contributor to social resilience," said Dr Tan. He encouraged delegates to visit Singapore's heritage and cultural sites, and to learn from Singapore's experience of harmonising culture with urban development.

In closing, Dr Tan reiterated that the summits are platforms for exchanging ideas and learning about innovative and emerging solutions in creating liveable and sustainable communities. He asked all present to forge networks and friendships that would benefit all.

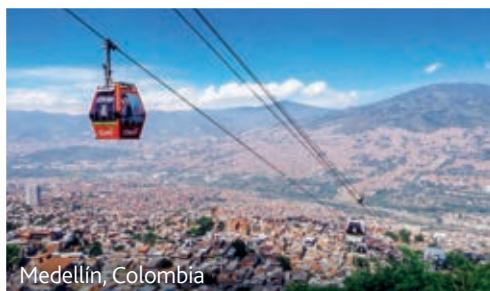
TOP HONOURS FOR INNOVATION

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The Prizes, named after Singapore's first Prime Minister, celebrate the pinnacle of thought-leadership in areas of water management and sustainable urban development, and promote best practices in urban and water solutions. The awards ceremony for both Prizes will be held on 11 July, with Mr Lee Hsien Loong, Prime Minister of Singapore, as Guest-of-Honour.

The Lee Kuan Yew World City Prize recognises Medellín as a model of urban innovation. In the face of sprawling informal settlements and drug-fuelled violent crime, the city employed creative and non-conventional solutions to transform urban spaces and the quality of life of its citizens within two decades. Medellín was selected from 38 nominated cities worldwide.

Medellín joins three previous laureates, Suzhou, New York and Bilbao, since the Prize's inauguration in 2010. The Prize honours cities,



Medellín, Colombia
© Urban Redevelopment Authority

recognising their key leaders and organisations for displaying foresight, good governance and innovation in the face of complex urban challenges, promoting ideas to inspire cities with similar challenges.

Professor Cherry has been awarded the prestigious Lee Kuan Yew Water Prize for his revolutionary groundwater research, resulting in a better scientific framework for

policies and best practices for the global groundwater community, with notable impact on many areas with groundwater contamination around the world. This year there were 98 nominations for the prize, double the number received for the previous prize in 2014.

The Lee Kuan Yew Water Prize is the premier award in the global water arena, celebrating the outstanding achievements of organisations and individuals who are tackling the world's water challenges with technologies, policies or programmes that have brought about real change for the benefit of humanity. Past honorees include the Orange County Water District, Professor Mark von Loosdrecht, Dr James Barnard, the Yellow River Conservancy Commission, Professor Gatzke Lettinga, and Dr Andrew Benedek.

REDUCE, REUSE AND RECYCLE

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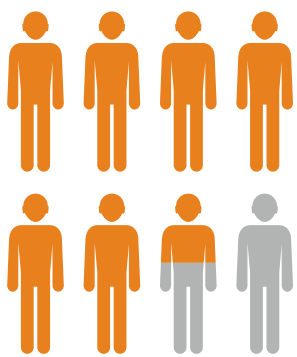
notable efforts and achievements in reducing packaging waste.

This year, the 3R Packaging Awards Presentation Ceremony will be held in conjunction with CleanEnviro Summit Singapore on 12 July 2016.

WCS

By 2050,

66%
of the global population
will live in urban areas



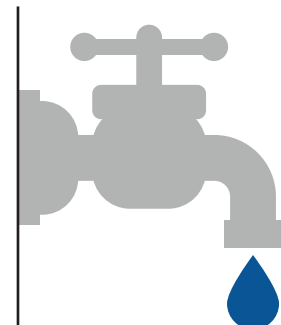
Source: United Nations

SIWW

By 2025, about

1.8 billion

people will be living in
regions or countries
with **absolute water
scarcity**



Source: The World Bank

CESS

Globally, we **throw away**

**1.3 billion
tonnes**
of **edible food** each year



Source: Food and Agriculture Organization of the United Nations

JOINT MINISTERIAL WELCOME MESSAGE

By **Mr Lawrence Wong, Minister for National Development, and Mr Masagos Zulkifli, Minister for the Environment and Water Resources**

Distinguished guests, we warmly welcome you to Singapore.

Around the world, rural-urban migration continues to grow, water resources face increasing supply pressures, and environmental degradation remains. The pace and complexity of these developments require new and innovative approaches to manage these recurrent challenges. This has spurred the need for nations to address these matters collectively.

An added challenge is how the fields of urban development, water and the environment have become inextricably linked with one another. All three disciplines require strong governance, access to investment and the development of cutting-edge innovation in order to progress. It is in this light that we meet here this week for the World Cities Summit (WCS), Singapore International Water Week (SIWW), and the CleanEnviro Summit Singapore (CESS).

Jointly held since 2012, these three events bring together decision-makers from the city, water and environmental sectors, including public sector leaders, business executives, technology providers, experts, academics and many others from all corners of the world to discuss present-day challenges and to share experiences, best practices and innovative industry solutions in a collaborative manner.

Since Singapore's independence 51 years ago, social, environmental and economic sustainability have been our national priorities. The outcomes we enjoy today are achievable only because of strong leadership and governance, use of technology and best practices, and a multi-stakeholders approach of discussing concerns and co-creating solutions. We see this being practised at the previous editions of WCS, SIWW, and CESS. This year, the summits focus



(L-R) Mr Lawrence Wong, Minister for National Development and Mr Masagos Zulkifli, Minister for the Environment and Water Resources

prominently on the future, and a recurring theme in all three summits is the showcase of new and cutting-edge solutions in the fields of urban development, and water and environmental management.

The theme for WCS this year is "Liveable and Sustainable Cities: Innovative Cities of Opportunity". As the premier platform for national and city governments, as well as industry leaders, WCS seeks to address critical urban challenges presently and in the future. The Summit comprises tracks focused on dynamic governance in an increasingly complex global economy, effective city planning, particularly in the area of housing, as well as strengthening infrastructural and social resilience. This year, the spotlight is on urban innovations for a smart city, even as there will be new tracks to discuss the case for culture in the city and financing a sustainable urban future. Of note is the seventh edition of the annual WCS Mayors Forum, which brings together more



than 100 mayors and city leaders from all over the world.

Another highlight is the Lee Kuan Yew Prize Award Ceremony and Banquet. Attended by dignitaries from around the world, the event celebrates this year's winners of the Lee Kuan Yew World City Prize and Lee Kuan Yew Water Prize. We congratulate 2016's winners - the city of Medellín, Colombia; and world renowned hydrogeologist, Professor John Anthony Cherry from Canada - for their achievements and contributions to the creation of liveable, vibrant and sustainable urban communities, and to solving the world's foremost water challenges, respectively.

SIWW has grown steadily over the years to become a leading event on the global water calendar. This year's event with the theme "The Global Platform to Share and Co-create Water Solutions" will host an array of flagship programmes where industry

players showcase the latest in business, scientific and technological innovation, and policy developments in water resource planning. One of the highlights of this year's SIWW is the Smart Water Forum, where attendees will gain insights into the array of technologies that are transforming the water industry to improve efficiency and productivity. The exclusive high-level Water Leaders Summit will bring together global water industry leaders, government regulators and policy think tanks to discuss solutions to overcome pressing water issues. These include water accessibility, sustainability and supply resilience.

CESS' theme "Innovative Clean Environment Solutions for Growing Cities", will be the centrepiece of this year's discussions as government leaders, policymakers, regulators and industry captains converge to connect, examine and discover practical solutions that address the environmental challenges of tomorrow's cities. There will be several platforms to facilitate such dialogue, one being the Clean Environment Convention, which will discuss the key drivers, opportunities and strategies to enhance the effectiveness of the cleaning and waste management sectors. Another is the Clean Environment Regulators Roundtable, which is an exclusive closed-door session to promote frank and open discussion on the challenges faced by senior environmental management practitioners and policy makers. Of note is the Innovation Pitch, where environment-related technology innovators are given a platform to present their ideas to potential investors, incubators, venture capitalists and business partners.

We hope you will have a rewarding experience at these three global events. We wish you a pleasant stay in Singapore.

VIEW FROM THE FLOOR CASHLESS PAYMENTS - PAVING THE WAY TO SAFER, SMARTER CITIES

By **Amala Pillai**

Smart solutions such as cashless payments can help resolve urbanisation problems through the provision of cost- and resource-saving data insights and innovative technology

Payments technology is quickly becoming a vital part of converting a city to a "smart city". However, while electronic payments have gained traction amongst consumers in many developed countries, most transactions in emerging markets like Thailand and Indonesia still predominantly involve cash.

According to a report by the United Nations Secretariat, 64% of Asia's population will be living in urban areas by 2050. This will

inevitably result in a greater demand for housing, water, transport and services, creating economic, social and environmental issues. Governments and urban developers are therefore looking to smart city development and cashless systems to address some of these issues as their cities continue to transform at breakneck speed.

Speaking to *Solutions* newspaper, Mr Ari Sarker, Co-President, Asia Pacific, MasterCard explained the need for a cashless system.

"In many countries, cash production makes up nearly 1.5% of its gross domestic product (GDP). This can be especially taxing for emerging markets whose consumers tend to forgo cashless payment methods for more traditional ones, given that many of them might not have the necessary technology infrastructure to facilitate cashless payments," he said. "Anonymous and nearly untraceable, the use of cash also creates an underestimation of a country's GDP, making room for shadow economies and tax evasion. In addition, residents and visitors of cash-dependent cities are more susceptible to theft and street crime."

Mr Carlos Menendez, who is President of Enterprise Growth and Partnerships at MasterCard, agreed. "Electronic payments can make tangible improvements to a city's transportation, both from the commuter's and government's perspective," he said. "The introduction of electronic payment methods, such as contactless cards, enables a heightened level of safety and security in transactions, as well as efficiency and convenience. Embedding



Ari Sarker, Co-President, Asia Pacific, MasterCard.

electronic payments in a transportation system is not only safe and secure, but can provide data-rich insights to governments that can provide valuable contributions to planning. For example, identifying peak travel periods and passenger loads across the day can help develop flexible pricing schemes."

The potential offered by connected payment devices is enormous. With heightened integration and connectivity, cities can enjoy an easier transformation to a smart city.



URBANISATION'S MOST WICKED PROBLEMS

By **Jennifer Eveland**

WCS Young Leaders add fresh perspectives



In Conversation With Peter Brabeck-Letmathe, chairman of Nestlé S.A. at the WCS Young Leaders Symposium

Cities are at the centre of innovation, accelerated by new technologies and accentuated by a higher percentage of residents between the ages of 15 and 35, said Mr Peter Brabeck-Letmathe, chairman of Nestlé SA, in his keynote address at the World Cities Summit (WCS) Young Leaders Symposium.

The third annual WCS Young Leaders Symposium, titled "Liveable and Sustainable Cities: Innovative Cities of Opportunity", welcomed 56 young leaders from 38 cities worldwide. Participants came from government, private and people sectors, from centuries-old and decades-young cities alike. The eclectic mix of cities, representing varying stages of development, geography and culture, provided the young leaders, 34 of whom were new to the symposium, with an exciting base for dialogue.

Mr Brabeck-Letmathe set the stage for talks, stating that current approaches to urbanisation are unsustainable. "The problem is that the standard mode of urbanisation is a Western and a rich-country model which has been

exported to poor countries," he said. "It is a model that is too energy- and resource-intensive, and is neither environmentally nor economically sustainable, and therefore is socially not sustainable in the long term."

He also shared his thoughts about water management and food security, noting the need for cities to reduce waste and shorten supply chains, and spoke about the opportunities created by automation technologies and the Internet of Things, as well as the need for the private sector to partner with the public sector to help governments find a balance for the sustainable use of resources.

The Young Leaders broke into groups to share their experiences and views about some of the particularly wicked problems that cities face and offer refreshing insights on urban management and governance. Key points produced at the closed session were summarised and presented at the WCS Mayors Forum.

"We aligned the symposium closely with the agenda of the WCS Mayors Forum," said Mr Desmond Lee, Singapore's Senior Minister of State for National Development in his opening address to the delegates. "Young leaders will discuss the same issues as the mayors, with a view of infusing a fresh perspective via a formal interjection at the WCS Mayors Forum."

The invitation-only symposium was established in 2014 to amplify the work of young leaders within the WCS community of practitioners and thought leaders. Last year's edition was held in New York City and in 2017 the event will be hosted by Suzhou, China, both laureates of the Lee Kuan Yew World City Prize.

CELEBRATING URBAN JOURNEYS

By **Vicki Yang**

Solutions introduces the winner of the Lee Kuan Yew World City Prize 2016 and the four cities selected for Special Mention

Bold and visionary leadership combined with social and urban innovation has earned the city of Medellín the Lee Kuan Yew World City Prize 2016.

The second-largest city in Colombia, Medellín was strained by uncontrolled urban expansion, which resulted in large expanses of informal settlements occupying the hills along the periphery of the urbanised zone. Urban sprawl is a common problem for many major cities in Latin America, Africa and Asia, but the poor living conditions were exacerbated in Medellín by drug-fuelled crime for years.

Working with limited resources, the city's leaders employed creative, non-conventional approaches to transform communities, emphasising education and cultural transformation, as well as implementing impactful projects to bring about change in the city. Demonstrating strong political will and a commitment to good governance, Medellín's elected leaders foster citizen participation and prioritise equal opportunities for all citizens.

"Medellín's transformation has been extraordinary," said Professor Kishore Mahbubani, Chairman of the Nominating Committee. "It has gone from being one of the world's most dangerous cities to a liveable and innovative city. Its success gives hope to many cities in developing countries, where the next wave of massive urbanisation will take place."

In addition, four cities have been accorded Special Mentions – Auckland (New Zealand), Sydney (Australia), Toronto (Canada) and Vienna (Austria). Strategies employed in their successful urban journeys include long-term planning, good governance and strong leadership, urban innovation for sustainability and liveability, citizen engagement and social integration.



Medellín, Colombia

© Municipality of Medellín

Auckland is recognised for overcoming planning challenges through a highly integrated governance model to bring about urban transformations, and the social integration of Māori and other indigenous groups.

Sydney's "Sustainable Sydney 2030", which aims to make the city green, global and connected, wins it a Special Mention. The plan also reflects the community's desire for a city that is economically prosperous, liveable, inclusive and culturally alive.

Toronto is accorded Special Mention for its social integration strategies, which embrace the diversity of a population of many immigrants, and successful efforts in revitalising a once 'dying city core' through good urban planning and design.

Vienna is recognised for successfully transforming itself into a liveable, modern green city, while protecting its rich heritage.

At the World Cities Summit, representatives of all four cities will share their experiences and achievements at the Prize Forum, while Medellín will present the Prize Lecture.

The Lee Kuan Yew Prize Lectures and Lee Kuan Yew World City Prize Forum will be staged at Sands Grand Ballroom D-E, Level 5, 13.45–15.15 and 15.30–17.00 respectively.

SITE FOR SORE EYES

By **Chua Kim Beng**

With 10 site visits scheduled, World Cities Summit delegates have a chance to see first-hand how ideas such as biodiversity and conservation are translated and embodied in a city such as Singapore

Registered delegates of this year's World Cities Summit have a choice of 10 site visits spread across different parts of Singapore. These give participants a chance to experience how policies and ideas for a sustainable city are turned into reality. Separately ticketed and available for sign-up at registration, these visits explore themes such as biodiversity, sustainability, heritage, conservation and health.

First-time visitors to Singapore should consider "Highlights of the Jubilee Walk Trail". Created to celebrate Singapore's Golden Jubilee in 2015, the walk takes delegates to locations that offer glimpses of the city-state's past, present and future. "Smart Green Design" gives delegates a tour of two hospitals designed to be carbon-neutral in infrastructure, water and energy systems. The second part of the tour highlights



Helix Bridge, in Singapore

the green initiatives launched since 2012 by Singapore's Housing and Development Board in 38 apartment blocks.

Slots are limited, so reserve yours now. For a full schedule of these site visits, log on to www.worldcitiessummit.com.sg/about-site-visits.



THREE THINGS EVERY CITY MUST DO TO SUCCEED

By **Joseph Jones**

Long-term planning, constant innovation and the ability to take decisive action are the keys to urban success

To an audience of 110 mayors from all over the globe, Mr Lawrence Wong, Minister, Ministry of National Development, Singapore, outlined three key issues cities face today.

Long-term planning must be a central tenet of any public administration, argued Mr Wong. While this is not easy in a world that expects immediate results, he used the example of Singapore as a "garden city" to

illustrate the importance of foresight. More than just a catchy title, Singapore's first prime minister, Mr Lee Kuan Yew, saw a "garden city" as a "strategic imperative". Regardless of each Singaporean's socio-economic status, "It was vital to create a sense of equality in society," said Mr Wong, "so that no one would be excluded from public space."

Constant innovation and research and development (R&D) are also imperative, he



The 2016 World Cities Summit Mayor's Forum saw 110 mayors from cities across the globe gather to learn and mutually benefit from one another's experiences

said. In Singapore's case, this was driven by necessity. Constrained by limited land space and lack of natural resources, "Singapore had to innovate and turn our vulnerabilities into strengths," said Mr Wong. This has seen Singapore pioneer innovation and R&D into water use, green transport and mobility solutions – all areas where a small, relatively densely populated city-state would be expected to struggle.

The third key area for cities that Mr Wong highlighted is the need to constantly engage with different stakeholders and take decisive action. Mr Wong acknowledged this is perhaps easier said than done. As a newly independent nation, Singapore's founding leaders were faced with the need

to make a number of tough decisions. "We had to make short-term sacrifices to ensure long-term survival," said Mr Wong. Yet the benefits of this policy are evident in Singapore's relatively rapid transition from village living to public housing. Today, over 80% of Singapore's population live in public housing. Furthermore, due to rigorously implemented social policies, all such neighbourhoods are culturally and ethnically mixed – resulting in an integrated and harmonious society.

Finally, Mr Wong called on the assembled mayors to take the opportunity to learn and benefit from each other's experiences, in order to ensure that we make our cities better tomorrow than they are today.

CHANGE FOR THE BETTER INSTILLING PUBLIC ACCEPTANCE THROUGH MULTICHANNEL ENGAGEMENT

Jakarta Governor Basuki Tjahaja Purnama, Auckland Mayor Len Brown and Taipei Mayor Ko Wen-je share best-practices in the areas of public engagement and governance

How can cities better engage with citizens, in order to improve lives, amend policies and tackle modern-day challenges?

Mayor Ko Wen-je (KW): For a government to make or change policies, it often takes long-term planning, a legislative process, and cross-party agreement. So we set up the Citizen Participation Committee, consisting of members from NGOs and from administrative authorities. It has three working groups to promote public engagement in areas like the policymaking process, open data and data mining, and participatory budgeting.

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

Governor Basuki Tjahaja Purnama (BTP): Transparency is the cornerstone of citizens' participation. Every resident can view our executive meetings on our YouTube channel

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

How should cities go about creating mechanisms for participation, and what should these comprise of?

KW: We have created several mechanisms to incorporate public engagement in the policymaking process, such as the Civil Café. The Civil Café is meant to be a space wherein we can use public discussion as a primary evaluation of any potential new policies. This year, we drafted a procedure for the process: each department first collects suggestions through the Civil Café, documents and evaluates them, then posts notifications for participants online, and finally presents a report indicating which suggestions were or were not incorporated and why.

LB: We have advisory panels for youth, seniors, Pacific peoples, disabled peoples,

ethnic peoples, LGBTI people, as well as panels for rural people, for the heritage sector, and for the city centre. They make sure that we hear minority voices.

BTP: Building trust is the key to activating citizens' engagement. To do so, we ensure prompt replies to each citizen's complaints. For example, Jakarta residents can reach us through seven channels: our call centre, email, SMS, Facebook, Twitter, forum and our QLUE app. We receive no less than 4,000 pieces of feedback daily, and the city's 72,000 civil servants follow up on each one. The response time has been improved from an average of two days, to less than 12 hours now.

KW: The Taipei City Government also has a procedure for participatory budgeting. Before we involve the public in any discussions, citizens need to understand the budget. Therefore, we launched our Visualised Budgets platform in 2015 to give the public an idea of the projects the city has planned for the next year and the distribution of the entire budget.

The above interviews are part of an extended article, "Thinking Ahead", featured in Issue 9 of Urban Solutions magazine. Download it at clc.gov.sg.



TODAY'S HIGHLIGHTS

**LEE KUAN YEW
PRIZE LECTURE**
13.45-15.15

**LEE KUAN YEW
WORLD CITY PRIZE
FORUM**
15.30-17.00





WATER INDUSTRY YOUNG GUNS GATHER AT MARINA BARRAGE

By **Chua Kim Beng**

The second Young Water Leaders Summit kicked off yesterday, allowing water industry professionals from across the globe to collaborate on innovative solutions



Mr Henk Ovink, the Special Envoy for International Water Affairs for the Kingdom of the Netherlands, encouraged participants of the Young Water Leaders Summit to make a difference



Dr Amy Khor, Senior Minister of State for the Environment and Water Resources, took the audience on Singapore's journey towards water sustainability

About 90 water industry professionals from cities around the world descended on Marina Barrage yesterday. They were attending the first day of the Young Water Leaders Summit, a three-day event that is part of Singapore International Water Week (SIWW). The summit seeks to engage youths on water issues through talks and breakout sessions.

In the first presentation of the day, Mr Henk Ovink, the Special Envoy for International Water Affairs for the Kingdom of the Netherlands, spoke on the topic "Innovation: A Buzzword or Necessity?" After sharing a series of alarming numbers (among other things, 50% of aquifers worldwide are beyond the tipping point, 90% of natural disasters are water-related), Mr Ovink concluded that "a transformative approach based on cultural change" is vital for the next five years, the time frame to implement the decisions from last year's COP21 in Paris. In addition, he noted that the innovations which develop henceforth needed to be "long-term, collaborative, and inclusive".

Ms Elis Furlong, who works for Northumbrian Water in the UK, found herself greatly inspired by Mr Ovink's words. "It is really great to get some sort of inspirational message from him," she affirmed. "I think he energised everybody in the room. It is great that he spoke about innovation, and us being the spark and creating that fire! Someone with his wealth of experience telling us that we can be the change, that we can make a difference – it was really encouraging."

Afterwards, the "See the Change: Mapping Water Innovation Globally" session saw summit participants discussing and listing innovative projects at the local, national and international levels, then charting the projects on a world map.

During the Water Leaders Panel, three industry veterans spoke about their careers in the water sector. Mr Booky Oren, Chairman and CEO of Booky Oren Global Water Technologies, revealed that he entered the

industry relatively late, only in his 40s. Ms Zhang Lei, CEO of Aquapoten Company Limited, was enticed into joining the water industry after encountering it in her previous profession as a lawyer. Ms Diane d'Arras, Senior Executive Vice President, Water Europe of SUEZ, advised the audience to try different functions within the industry every three to four years for continual learning.

Mr Kris Catangcatang, who works in Maynilad Water Services Inc in the Philippines, appreciated this session the most. He said, "It was nice to hear the points of view of people not only in our group, but also from people who have more experience than we do."

After lunch, the summit continued with "Learn from Peers". Three participants – including Mr David Pong, CEO of Singapore company Wateroam – shared how innovation made an impact on their respective spheres of influence. It was also an opportunity for other summit participants to describe the challenges they face, and for everyone to chip in with proposed solutions.

For Mr Pong, the best and most enjoyable part of the summit was getting to know the participants. "Everyone comes from a different background. There were people who studied policies, food science and mechanical engineering, yet we were all sitting at the same table talking about water," he marvelled. "Water is not a single-sided thing that we can solve in our own department; it requires a multidisciplinary approach."

In the day's final presentation, "Dialogue: Journey Towards Water Sustainability", Dr Amy Khor, Senior Minister of State for the Environment and Water Resources, took the audience on Singapore's journey towards becoming sustainable in water. She also briefly touched on Singapore's current and ongoing research into a novel membrane technology to reduce the energy required to desalinate seawater.

The Young Water Leaders Summit wraps up on Tuesday, 12 July 2016.

60-SECOND INTERVIEW WITH JONATHAN CLEMENT

CEO, PWN Technologies

What do you think is the future of water technology, given that in 2015 the World Economic Forum ranked the risk of water crises as being very likely to happen, and with the greatest impact on humanity?

As our world changes, the priorities for what water technology needs to deliver is also changing. Most importantly we have a global trend of urbanisation. Existing water supplies are not sufficient to meet the needs of humanity. The shift is moving towards using impaired water supplies that are decentralised within the urban environment and away from the historical centralised easy-to-treat supply. To do this we need very compact technology, as there is little space within the urban environment. Historically, water treatment plants produced large amounts of waste streams and consumed large amounts of resources – energy and chemicals. Now technology is moving to be more environmentally friendly and clean.

A final thought is for drinking water systems with regards to water scarcity. While we have systems that produce a very high level of water quality, they do so with high costs in terms of water wastage. We need to move to systems that recover more water.

While there is significant demand for water innovation and "water as a service" in industries like oil and gas, mining and agriculture, what are some of the main challenges that remain in these sectors?

The product that they produce is their core business and their core business is not water. However, each of these industries uses a large amount of water and it is easy to purchase water from utilities. As a result there is not much drive to apply innovation to save water, which stresses the utility supply situation. The key will be to work in partnership with these industries to incentivise water-saving and recycling.



The water industry is well known for its innovation, yet implementing ideas continues to be challenging. Why is this, and what can the water community do to amend this?

There are many additive dimensions to this. First, the parties involved – utilities, contractors and consultants – do not want to take the risk of using a new technology until it is extensively proven. This creates a paradox, because the utility wants an innovative technology, but wants something that is proven over several years – which may or may not be innovative ultimately. One way to deal with this is to perform demonstration testing with a small full-scale plant. A consortium of utilities could come together and sponsor a demonstration testing programme to prove the reliability and performance of the technology.

When partnering with PUB (Singapore's national water agency), PWN Technologies (PWNT) performed demonstration testing over a two-year period at an existing water production site to prove the technology. This enabled adoption. A majority of utilities in the world are governed by procurement rules that drive the adoption of low-cost technology, rather than long-term reliable or high-performance systems. Utilities need to initiate change with their procurement arms to improve this.

INTRODUCING THE INNOVATION PAVILION

The Innovation Pavilion at City Solutions Singapore, will showcase best-in-class water technology companies from around the world.

Attendees will hear from the who's who of the industry, including Dr Piers Clark, founder and the chairman of Isle Utilities, Mr Jack Zhang, General Manager of Shanghai Winner, and Mr Trevor Hill, chairman and CEO of Fathom – all of whom will

touch on today's most pertinent technological shortfalls.

Special guests will be offered an exclusive introductory tour of featured companies and their showcased technologies every morning. The programme will also feature "tech talks" and panel discussions, where new and novel ideas will be exchanged along with thought-provoking dialogue. Companies featured include those highlighted in TechXchange 2016.



TECHNOLOGY FAST FORWARD

TECHXCHANGE 2016

By **Amala Pillai**

A global forum that brings together innovators, partners, buyers and investors in order to fast-track water innovation



TechXchange panellists agreed that collaboration and partnerships will better equip water technologists to attract investment

TechXchange is a forum for water technology providers to share ideas, with the aim of advancing technologies, solving the water industry's foremost challenges, and – arguably of most significance – accelerating the commercialisation of new technologies and strategic relationships.

Staged as an integral part of the biennial Singapore International Water Week, this year's TechXchange boasted an outstanding line-up of speakers – including investors, consultants and utility executives – and featured some of the most cutting-edge technologies in today's water research and development scene.

"TechXchange is a platform where good ideas are presented to all players from value chain, to help these ideas go to market," said Mr Harry Seah, Chief Engineering and Technology Officer, PUB.

Companies showcased at this year's TechXchange include:

- Water Monitoring**
 - Subnero
 - Syrinix
 - Vienna Water Monitoring Solutions
- Leak Detection**
 - Utilis
 - Lighthouse Integral
- Wastewater Companies**
 - Arvia Technology
 - Aerofloat
- Water Monitoring**
 - Envirotech & Consultancy
 - Muradel
- Membranes**
 - Nanostone
 - Century Water
 - Oxymem
 - Environmental Dynamics International
- Innovation Competition:**
 - Municipal Solutions**
 - Winner: Utilis
 - People's Choice: Oxymem
 - Industrial Solutions**
 - Winner and People's Choice: Vienna Water Monitoring Solutions

PARTNERSHIPS TO EASE INVESTOR- INNOVATOR DEADLOCK

By **Howard James and Chin Wei Lien**

Business model innovation will see investors and innovators unite, agree business leaders

The 2016 edition of TechXchange opened with a lively debate on whether there is a lack of good ideas or funding in the water market.

Dr Reinhard Hübner, Investment Manager at SKion, and Mr Trevor Hill, Chairman and CEO of Fathom, argued that innovators are inventors, rather than business entrepreneurs. They are skilled at developing solutions, of which the majority are not scalable. However, they lack the skills necessary to market, develop and operate a profitable business with long-term returns.

Conversely Mr Adam Lovell, Executive Director, Water Services Association of Australia, and Dr Piers Clark, Chairman of Isle Utilities, believe many investors lack the understanding of how a specific technology works, and how factions of the investment community expect returns that are challenging to meet.

"The challenge facing the water community is a fundamental lack of business model innovation," said Hill.

He added, "What our sector often fails to understand is the behaviour of the buyer. Generally, they are risk-averse. And so it is not only technology, but technology coupled with a business model that makes a difference."



Dr Reinhard Hübner, Investment Manager at SKion calls for greater entrepreneurialism among water innovators

Both sides agreed that through business model innovation, technologists must find partners to help them commercialise an idea, make it scalable, and ensure it is attractive to the investment community.

The notion of partnerships was emphasised in the afternoon's session, titled "Accelerating Technology Development Through Investment and Partnerships", where Mr David Henderson, Managing Partner at XPV Water Partners, reiterated the need for close collaboration. "In other sectors, everybody comes together with their two cents, and they go to policymakers with one message," he said. "You do not see that in the water sector. There is fragmentation, and that is the problem."

Aside from the fusing of ideas and funding, he also stressed the importance of dialogue with regulators – the combination of which he believes is the true driver of innovation success.

PERSPECTIVES WITH PIERS CLARK

Chairman, Isle Utilities



What new water technologies do you see as being potentially disruptive, and why?

The technologies I love to hear about are those that make you step back and think, "Wow, I wish I had thought of that." They are usually fantastically simple in concept. For example, there is a small start-up in Manchester, UK, that has been developing a spray that could potentially be applied to

any existing or new desalination membrane, which could increase the flux by 100-fold. It works through the specific repellent capacities of the spray but is fantastically simple in concept, and if proven to work at scale will completely disrupt the desalination sector.

What are the foremost challenges facing water technologies today, and what can be done to overcome these, in your view?

People like to claim it is lack of funding but I do not think this is true. We are not short of funding for good ideas, and we are not short of good ideas either. There is a wealth of brilliant scientists and engineers in the water sector doing fantastic work to address the real and pressing water and sanitation challenges. The biggest blocker to the adoption of new technology is the appetite of the end-users to adopt new technology. Unfortunately, there appears to be a belief that all technologies must be trialled by every utility individually and this extends the sales cycle to such a degree that most technology companies go out of business before they make their first commercial sale.

What current technologies do you most admire, and why is this?

Isle works for around 150 utilities across the globe to help them identify, screen and adopt new technology. We review about 500 new technologies every year and there are so many that I admire that it is impossible to pick just one. In general, a good technology ticks three boxes: it needs to have a great product, a strong market (geography and/or sector) and it needs to have a capable management team.

What are the benefits of events like TechXchange to the water community, and why is the programme important to the future of water technology?

TechXchange is vital to the global water sector as it provides one of the best, if not the best, platform for showcasing new technology. It is here, in Singapore, the gateway to Asia, that end-users, investors, academics and technologists can come together to share their experiences and create new connections.



TODAY'S HIGHLIGHTS

Foyer Area,
Level 3

WATER
CONVENTION
POSTER
PRESENTATION

14.00-18.00





CLEANENVIRO SUMMIT SINGAPORE THE THREEQUEL

By **Chua Kim Beng**

The third edition of this sustainable development forum, held at Singapore's Marina Bay Sands, will be graced by foremost experts from the global cleaning and waste management industries

Once more, the CleanEnviro Summit Singapore (CESS) returns to the Sands Expo and Convention Centre. The biennial event, which is held in conjunction with the World Cities Summit (WCS) and the Singapore International Water Week (SIWW), is a forum dedicated to unearthing practical solutions to address environmental challenges for tomorrow's cities.

Since the launch of the first CESS four years ago, its purpose has been twofold. First, to bring together environmental management professionals and experts from around the world – including ministers, mayors, government officials, industry leaders, and heads of international organisations – in order to learn about the latest environmental trends and solutions, and share knowledge; and second, to uncover business opportunities and forge new partnerships with key city officials and industry players.



Singapore, Central Business District

Interest in CESS has grown significantly since its humble beginnings. The inaugural event, held in 2012 alongside WCS and SIWW, saw more than 19,000 attendees from 106 countries visiting booths set up by more than 700 exhibitors, and generating more than US\$10 billion (S\$14 billion) in business deals. The 2014 edition saw an increase in those numbers, with approximately 20,000 attendees from 133 countries browsing the technologies helmed by more than 900 exhibitors and generating almost US\$11 billion (S\$14.5 billion) in business deals.

The theme for the 2016 edition is "Innovative Clean Enviro-Solutions for Growing Cities". Included among the many prominent experts who have been scheduled to speak at the Clean Environment Convention (CEC) are Mr Philip Heylen (Vice-Mayor for Culture, Economy, City

Maintenance and Property Management, City of Antwerp, Belgium); Mr David Newman (President, International Solid Waste Association); Mr Balakrishnan T (Vice-President, Diversey Care, Asia Pacific, Sealed Air); and Mdm Nichol Ng (Co-founder, Food Bank Singapore).

Divided into three tracks – Cleaning, Waste Management and Combined – CEC will address an array of issues and themes, including technological advancements and smart city development; staying competitive with a skilled workforce; the Internet of Things and its effect on cleaning; and turning food waste into a valuable resource. Participants can also expect to attend a number of networking sessions and business forums, as well as to enjoy visits to an incineration plant, a landfill, and a metal recycling facility.

PITCH PERFECT

By **Chin Wei Lien**

This new programming component of CESS offers companies a stage to show off their innovative products and solutions to potential investors and partners



Are you looking to get on board with a clever, money-saving idea, or seeking solutions to environmental issues? Then allow us to introduce you to the Innovation Pitch.

This CESS initiative, making its debut this year, is a platform for entities of all sizes – start-ups, SMEs or multinationals – to attract investors and partners for their new technologies.

From intuitive smart home solutions that can help you conserve energy and cutting-edge technology to reduce food waste, to industrial solutions such as the recovery of metals from hazardous waste, the Innovation Pitch is set to intrigue and impress with a line-up of 10 innovators from various sectors.

Be a part of this peek into the future on Tuesday, 12 July 2016, 10.00 to 12.30 at the NEA Pavilion at Level 1 Expo Hall A, Sands Expo and Convention Centre.

CESS

Almost

1 billion

urban poor live in **informal settlements with limited or no waste management facilities**



Source: The World Bank

CESS

Cities consume close to

2/3

of the world's energy

and account for more than

70%

of global greenhouse gas emissions



Source: The World Bank



PERSPECTIVES WITH ANNE GERMAIN

Director of Waste and
Recycling Technology,
National Waste and
Recycling Association



What can be done to make recycling more attractive in the developing world?

In the US, the states have adopted a wide range of policies that impose a myriad of requirements that incentivise recycling and penalise failure to recycle. As a result, even within the US, recycling rates differ significantly from one community to the next. While recycling some commodities will likely always have value, there will also always be portions of the waste stream that do not have sufficient value to encourage recycling solely on financial grounds. Therefore, policies and regulations will often be the key drivers to making recycling attractive wherever you are.

Low commodity prices have impacted the recycling market. How can we overcome this?

To achieve better returns, a recycler might decide to sort into more categories to achieve better pricing. Alternatively, recyclers might shift the cost equation to the in-bound side of their materials management. In order to develop fair policies, private recyclers should work with municipalities to share both the risks and rewards associated with recycling.

Uptake of the 3Rs – reduce, reuse and recycle – remains modest in some countries. What are some ways to encourage uptake?

Recognition of the need to conserve resources and emphasising environmental awareness leads to greater participation in sustainably managing waste. This needs to be done at all levels: residential, governmental, commercial and institutional. It is important to create messages that will resonate with the local populace that take into account cultural mores to change behaviour. Education is key.

How can recycling research and development attract greater investment?

Since the government has often been the source of residential recycling, they are usually the source of the investment. Ultimately, as commercial businesses recognise opportunities in recycling, investment will follow.

How do events like CleanEnviro Summit Singapore benefit the recycling industry?

Such events provide a global perspective on many of the issues that individuals are dealing with at a local level. The free exchange of ideas sparks dialogue and encourages new ideas that lead to creative solutions and problem-solving.

Anne Germain will speak at the Clean Environment Convention on 12 July 2016, 14.00–15.45, in the session "Staying Competitive With a Smart, Skilled and Sustainable Workforce".

A TALE OF THREE CITIES

ENVIRONMENTAL BEST PRACTICES FROM AROUND THE WORLD

By **Chua Kim Beng**

Stockholm, Dubai, Adelaide – these cities are known for many things, from their iconic architecture to excellent shopping. And, they share another trait: a straightforward and successful approach towards sustainability and resilience issues, as well as sound policies that the rest of the world can learn from



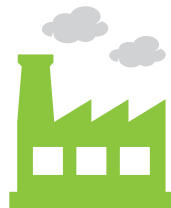
Stockholm

In 2010, Stockholm was given the European Green Capital Award, a European Commission initiative launched in 2008 to recognise cities in the European Union whose green policies have borne much fruit.

"Stockholm received top marks for its contribution to the fight against climate change, keeping all green spaces open to the public, low noise levels, waste management and sustainable land use," reads the award's *Final Report* on Stockholm.

One idea that the capital of Sweden employed was district heating and

Stockholm reduced greenhouse gas emissions by **593,000 tonnes** between 1990 and 2010



cooling. The city expanded its district heating system, which has greater efficiency and pollution control than localised boilers, boasting a growth rate of 200 gigawatt-hours to 300 gigawatt-hours per year. The expanded system also eliminated oil-based heating, and reduced greenhouse gas emissions by 593,000 tonnes between 1990 and 2010. At the time of assessment, the city had recently finished constructing its district cooling facilities, using a resource that it has plenty of: cold seawater. This led to a reduction of carbon dioxide emissions by 60,000 tonnes a year, thanks to the removal of small, electricity-driven air-conditioning systems, which also resulted in a decrease in the use of chlorofluorocarbons.



Adelaide

Adelaide's success in sustainability exemplifies the importance of cooperation. "One of the things I noticed while in Paris at COP21 in December 2015 was the uniqueness of the partnership we have here in Adelaide between the city council and the state government," said Mr Martin Haese, Adelaide's Lord Mayor, to the press early this year. "Effective collaboration between the city and the state is essential for real progress."

The city of Adelaide and the state of South Australia have jointly announced plans to make Adelaide a carbon-neutral city by 2025. The city council has been

Adelaide plans to become **carbon-neutral** by 2025



putting money where its mouth is, contributing annually to its Climate Change Action Initiatives Fund; for FY2015/16, that worked out to the tune of A\$932,000 (US\$692,000).

While the South Australian authorities have state-wide issues in mind, such as attracting approximately A\$10 billion (US\$7.4 billion) of low-carbon investments, they have promised to match Adelaide's incentive scheme for the installation of energy-saving gadgets. This allows building owners and tenants to offset the cost of setting up anything from an energy-monitoring system (about US\$90) to solar panels and energy-storage systems (about US\$3,700).



Dubai

Dubai's Green Building Regulations and Specifications were formulated to "enhance the performance of the newly-constructed buildings, improve public and environmental health, as well as improve the safety and general welfare of citizens". The policy was rolled out in 2011 for new government buildings, and was expanded to include all new buildings by March 2014.

To reduce consumption of resources, a comprehensive set of guidelines on solar reflective material, shaded areas, and planting of relevant vegetation is also included in the specifications. A result of this are lush vertical gardens, which are

Between 2011 and 2014, Dubai reduced energy consumption by **43%** and reduced water consumption by **15%**



not only aesthetically pleasing, but also enhance energy efficiency, reduce carbon emissions, and absorb noise and pollution. Numerous prominent buildings in the city already boast of such walls.

The regulations are one of eight programmes Dubai launched in a bid to win the city a spot in the list of the world's top 10 sustainable cities by 2020. This was revealed by HE Engr Abdulla Mohammed Rafia, assistant director general and chairman of the sustainability committee, Dubai Municipality, in his keynote address at the 2014 UAE Infrastructure Summit. He also noted that there had been 43% reduction in energy and 15% reduction in water in the construction of government buildings as a result of the regulations.

SMART NATION SINGAPORE

PART 1

By **Jennifer Eveland**

Powering a Sustainable Singapore



This article is part one of a three-part series on Singapore's Smart Nation initiative. It describes the initiative and how it will power a sustainable Singapore. The second part – to be published on Tuesday – will take a closer look at how the initiative is being rolled out, and the third – to be published on Wednesday – will focus on the nation's efforts to become a global industry hub.

In November 2014, Singapore Prime Minister Mr Lee Hsien Loong announced Smart Nation, a plan to apply big data and analytics technology and next-generation sensor networks to the country's pressing issues of urban density, an ageing population, healthcare, mobility and energy sustainability. As it builds the capabilities to solve these problems, the nation also plans to build a critical mass of experts and enterprises that can help other cities and nations use smart technology to solve their own problems.

"Smart city" technology is not new. A number of cities from around the world are already installing sensors to collect data, crunching the numbers, and using the results to increase efficiencies in everything from water usage to transportation and waste collection.

Singapore has taken the idea one step further. The nation's government seeks to transform the entire span of the city-state from a simple smart grid into a "living laboratory" of sorts, in order to tackle greater problems –

and with the ultimate goal of creating a "Smart Nation".

Smart Nation adopts a people-centric principle, rallying involvement from citizens, industries, research institutions and the government to collaborate on innovative solutions. It begins with the Smart Nation Platform, which will connect everyone and everything in Singapore, with a common technical architecture that will facilitate easy accessibility and encourage sharing.

Extensive real-time data will be public domain, with a number of channels for people to contribute ideas and generate practical solutions. A number of mobile applications and community hackathons have already begun to engage the public.

Despite the obvious focus on technology, the heart of Smart Nation is people – the citizens who use public infrastructure and can engage the system in meaningful ways. In the process, they can approach problems creatively to build a better nation. And because many other cities and nations around the globe share Singapore's pressing issues, it is hoped that Singapore's experience can help address some of these global challenges.

Visit the "Towards a Smart and Sustainable Singapore" Pavilion, on Level 5, 9.00 to 18.00.

MEETING THE INVESTMENT SHORTFALL

NEW FINANCING MODELS FOR URBAN PROJECTS

By **Amala Pillai**

With urbanisation showing no sign of slowing globally, new mechanisms are required to meet a growing funding gap

Urban development is expensive. The funding of basic urban infrastructure – including water and waste management facilities – currently accounts for 80% of global investments. According to the World Economic Forum, such investment add up to US\$3.7 trillion every year. With current yearly investments of just US\$2.7 trillion, the world is left with an infrastructure investment shortfall of US\$1 trillion each year.

While Asia is rapidly urbanising, infrastructure development across the region has somewhat lagged behind global standards in both quantity and quality – a trend that has hindered the growth of many Asian cities. Aside from high fiscal deficits, the main challenges hindering infrastructure development across Asia include limited

long-term funds in domestic markets, weak institutional frameworks, financial weakness of projects and poor project structuring.

Currently, conventional financing of growth for cities is limited to local taxes on land and property, grants, and transfers from central governments. These are often insufficient to meet funding requirements of infrastructure projects, resulting in the failure of plans.

"There is a clear need for cities to generate additional financing beyond government transfers. Such alternative financing sources could include bonds, public-private financing, performance-linked grants and municipal development funds," explains Mr Joris van Etten, Senior Urban Development Specialist, Asian Development Bank (ADB).

Recognising the lack of available financing, in 2013 ADB launched results-based lending (RBL) as a performance-based tool for financing. Unlike traditional investment lending, disbursements are linked to the achievements of results rather than to upfront expenditures.

ADB also encourages the public-private participation (PPP) model, where the private sector helps finance specific components in its public investment projects. ADB also has an Office of Public Private Partnerships, which coordinates PPP-related activities and provides transaction advisory services to clients in order to develop bankable PPP projects.

However, PPPs require a proper legal and regulatory framework. "Risk-sharing between public and private partners has to

be realistic concerning market interests and collaborations should add value to projects," advises Mr Van Etten.

In addition to the current turbulence in global markets, the rapid pace of urbanisation – most notably in emerging markets like those across Asia – is hindering the ability of cities and other public-sector authorities to fund urban development, water and waste management projects. Nonetheless, the introduction of financing mechanisms like RBLs and PPPs are providing alternative financing channels to conventional mechanisms.

To learn more, visit the "Financing A Sustainable Urban Future" forum, on Wednesday, 13 July 2016, at Sands Grand Ballroom E, Level 5.

THE BIG INTERVIEW

Solutions newspaper speaks to Mr Philip Heylen, Vice Mayor of Antwerp, Belgium



Antwerp is home to Europe's second-largest port. How does this contribute to Antwerp's circular economy?

Antwerp is Europe's most central seaport, with seagoing vessels transporting goods 80 kilometres inland, into the heart of Europe. For many European companies, the Port of Antwerp is the link with other continents, and for many companies in Asia, America and Africa, Antwerp is the gateway to Europe.

The port also acts as a logistic hub in a worldwide circular economy, where the recyclable materials are imported and exported. These include plastics, metals, wastepaper and cardboard, electronic waste, wood, ash, hazardous waste and more. It is clear that circular economy is at the heart of today's tendering debate, and the port has recently launched a tendering procedure to attract supplementary circular economy industries to the port. In that respect, it hopes to pave the path of the future.

A number of European cities, including Antwerp, have been highly successful in achieving public buy-in with regard to responsible waste management. How was this accomplished and what measures can

The city of Antwerp, Belgium has become known for its environmental initiatives – of particular note is the Stadslab 2050 programme. Can you explain more about the goals of this initiative, and how it is transforming Antwerp from a linear 'take-make-waste' system to a circular 'reduce-reuse-recycle' economy?

Stadslab 2050 is the urban laboratory in Antwerp that aims to accelerate the transition to a sustainable city. The project is bringing urban thinkers and creative players from inside and outside the city together, to fully experiment with the future of Antwerp. It is about creating a diverse network of entrepreneurs, citizens, researchers and decision makers.

The notion of a laboratory is important: experimenting, and sometimes failing, is permitted. And with professional and financial support, as well as a methodical approach, we are helping to ensure that projects evolve into viable business models within the scope of the circular economy. The Stadslab started out in 2013, and today, some 1,000 players are connected and more than 50 local projects have been launched. There are plenty of examples, but one that comes to mind is the library we started for second-hand fashion pieces – a perfect example of the fashion design industry entering the circular economy.



Antwerp, Belgium

There was a clear problem emerging in the discrepancy between our use of water and global water availability



other cities around the world take in order to emulate this?

The success of a waste management plan is dependent on three different types of policy instruments: legal instruments such as legislation, for example bans on landfilling and incineration, penalties, producers' responsibility, take-back agreements; economical instruments such as levies, taxes, financial support, and pay-as-you-throw tax; and finally, social instruments such as information and awareness campaigns, school education programmes and so on. The challenge is to find the most appropriate instrument or mix of policy instruments to achieve the targets. In order to succeed, local authorities need to work closely with

the region, companies, non-governmental organisations, environmental organisations and, of course the community.

Which cities or nations from around the world do you most admire, and why?

But of course, Singapore! With every visit to Singapore, I am amazed at how wonderfully well the Singapore authorities tackle the challenges associated with waste management. But I am an equal fan of Berlin – for its creativity and its efforts on sustainability – or New York, for its overall vibe and ambition.

In addition, the CleanEnviro Summit Singapore allows you to meet everyone from within the waste management community within the space of three days, whereas it would take you months and months of planning and travelling to meet them individually. Even more importantly, the summit is crucial in putting resources and waste management on the international agenda.

Mr Philip Heylen will be speaking at the Joint Opening Plenary on 12 July 2016, 9.15–10.30 in the session "SMART Solutions for Growing Cities".

PORT CITIES – IN FOCUS

SAILING TOWARDS GROWTH AND LIVEABILITY



Port cities have rich histories and complex issues distinct from other cities – challenges that will be closely examined at the "Future of Ports and Their Relationship with Cities" event, held on 12 July 2016 as part of the World Cities Summit.

During the event, the Mayor of Antwerp, Mr Bart de Wever, the Vice Mayor of Dalian and representatives from the Maritime and Port Authority of Singapore (MPA) will share their insights about the changing relationships between cities and ports, the processes that help achieve synergies in port and city growth,

and the current and future challenges in balancing growth and liveability. While larger global trends will affect ports across the board, local constraints and contexts will necessarily shape proposed solutions.

Jointly organised by the MPA and the Centre for Liveable Cities (CLC), the event will also feature the launch of a new book, *Port and the City: Balancing Growth and Liveability*. The book is the latest instalment of the *Urban Systems Studies* series published by the CLC, based on the Centre's research into key areas of Singapore's urban experience.

SEEN@ WCS

SEEN@ SIWW



For Auckland, the big challenge is transport. I am really fascinated by what Singapore does for road pricing - especially their GPS-based arrangement



Mr Len Brown
Mayor of Auckland,
New Zealand



Right: Microsoft is at the World Cities Summit to showcase software solutions that enhance urban planning



We have a serious drought in [South Africa] right now. We are looking for alternative water sources for our people, especially in terms of water recycling. Hopefully what we learn here can benefit those back home



Councillor Nomvuzo Shabalala
Deputy Mayor of Durban, South Africa



Above: President Tony Tan (second from left) posing with the winner of the Lee Kuan Yew Water Prize 2016 Professor John Anthony Cherry (second from right) and wife, and Mr Masagos Zulkifli, Minister for the Environment and Water Resources (far right)

SEEN@ CESS



In Wales, we have 21 different municipalities, and they all recycle in totally different ways. We need to make recycling as simple as possible



Ms Kathryn Warren
Principal Consultant
Ricardo Energy and Environment



Left: Delegates at the CleanEnviro Summit Singapore before the opening ceremony

SOLUTIONS

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