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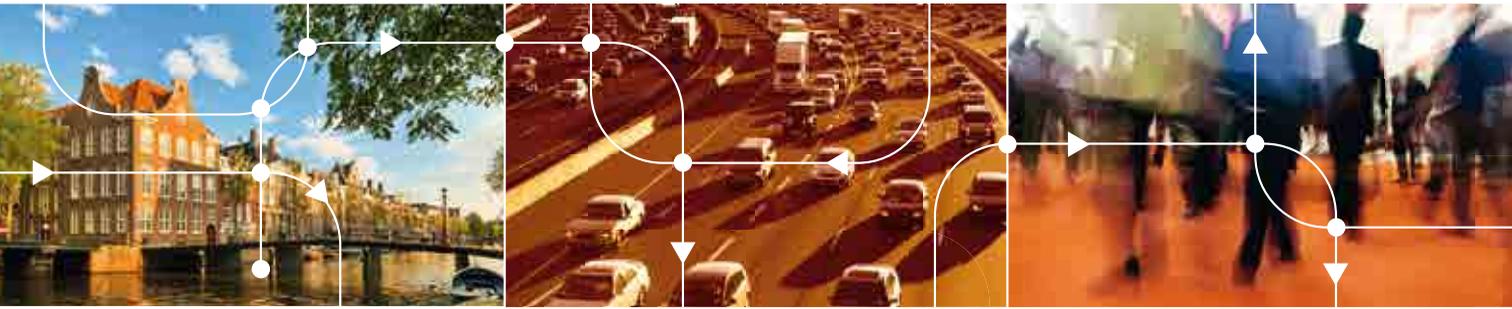
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Photo: Municipalidad de Rosario

By **Mónica Fein**, Intendant of Rosario, Argentina, and Vice President of Sustainable Urban Development and Climate Change, Mercociudades Network

As Intendant of Rosario and representative of the Mercociudades Network, I was invited to participate in the Climate Change Summit for Local Leaders in Paris in December in the context of the 21st United Nations Conference on Climate Change (COP21). Meeting with over 1,000 local leaders from around the world, we were tasked with presenting the vision and commitment to sustainability and climate change held by our network of over 300 cities.

In this context, we expressed the need for COP21 to listen to our cities, since climate change-related problems have an impact on the people living there. We underscored the commitment of Mercociudades to forge practical and effective solutions to attenuate climate change and to foment sustainable development with a strong emphasis on social dimensions, based on citizen participation. Particularly, we sought to create an urban habitat that is more resilient to climate change.

The Local Leaders' Summit was also a platform to reflect on the role of local

Latin American cities make a commitment to unity at COP21

governments in Latin America and their impact on the global agenda, as well as the perspectives of their associations and networks. As a result of this debate, representatives of local governments in Latin America signed the Commitment of Local Leaders of Latin America to Unity in Diversity, which I had the honour of presenting at the conclusion of the summit.

In this document, we noted the efforts taken by our cities and regions of Latin America to engage in dialogue and to work together, particularly in the framework of regional and national networks. We highlighted the experience

synonym for dispersion, a fragmentation of efforts and a lack of articulation”.

All of this has weakened the voice and impact of local governments in Latin America on the world scene.

Aware of this situation, local leaders who signed the Commitment have taken on the challenge to take action so that the many associations and networks of local and regional governments of Latin America are able to coordinate their efforts towards a common vision: a commitment to act united in diversity.

With this objective, we are seeking to build a new organisation of Latin American cities and local governments

The Local Leaders' Summit was also a platform to reflect on the role of local governments in Latin America and their impact on the global agenda, as well as perspectives of their associations and networks

of organisations with long histories, such as the Latin American Federation of Municipalities, United Cities and Local Governments (FLACMA), the Mercociudades Network and the Union of Ibero-American Capital Cities (UCCI). Newer initiatives include the Network of South American Cities (REDCISUR), the Euro-Latin American Alliance for Cooperation Among Cities (AL-LAs) and the Confederation of Associations of Municipalities of Central America and the Caribbean (CAMCAYCA).

As local leaders in the region we recognise that these networks and associations have not worked together. Each has its own agenda and represents only a portion of the diverse web of local realities of the region. As we noted in the document, for years “diversity has been a

based on the principles of democracy, transparency and effectiveness of actions, as well as a respect for plurality, diversity and equality among existing initiatives.

With a firm conviction that meeting this challenge is possible, we will make all efforts necessary in the Mercociudades network to achieve a united Latin America, from the local level to the 3rd United Nations Conference on Housing and Sustainable Urban Development (Habitat III) to take place in Quito in 2016. ■

Richard Forster, Editor-in-Chief of Cities Today, has been elected co-chair of the Media Constituency Group of the General Assembly of Partners for Habitat III. To make media submissions and discuss communications relating to Habitat III, please email: editorial@cities-today.com

Johannesburg: changing the mindset on mobility

The urban mobility community will fondly remember the unique social experiment staged by the City of Suwon, South Korea, in 2013 where, upon a proposal by ICLEI, an entire neighbourhood abandoned the car and adopted an ecomobile lifestyle for a whole month.

For the first time, Korea's car-centered society witnessed how 4,300 residents collectively enjoyed the reclaiming of street space from cars for social and recreational use and the opportunity for children, the elderly and the physically impeded to move safely in the streets.

Two years later, in October 2015, the City of Johannesburg, in partnership with ICLEI, organised the second EcoMobility World Festival. The ambitious Executive Mayor Mpho Parks Tau selected the Sandton Central Business District (CBD), home to banks, the stock exchange and deemed as Africa's richest square mile, as the location.

"What we can do in Sandton can be done everywhere in the city and the country," said Tau. "Our aim is to encourage participation and creative thinking around the issue of ecomobility and show that Johannesburg is determined to combat climate change."

Taking on a CBD that receives 120,000 commuters every day—with 75,000 cars creeping into its multi-storey car parks every morning—meant the city could not completely shut down the CBD to cars. As commuters to Sandton, and not just residents, were to be addressed and invited to participate, the project had to target citizens across the metropolitan area.

Infrastructural provisions to support the festival goal included the closure of certain streets, dedicated lanes for public transport, park-and-ride facilities, enhanced capacity of public transport services, wider pavements, cycle lanes and more.

The festival reduced the percentage of private car usage in Sandton by 22 percent during the month. The metropolitan rapid rail network, Gautrain, increased its ridership by roughly 8-10 percent between July and October 2015. Compared to a survey done in 2013, five times more people walked along West Street, the central axis through Sandton CBD.

What struck me is that many interviewees who had used public transport during the festival said they had never used a train or bus before. The comforting message is that most of them found it a positive experience. As a legacy of the festival, the city is determined to establish four permanent park-and-ride facilities. The temporary public transport lanes in the Sandton CBD will be converted into permanent structures. Commuter shelters will enhance safety. About 10 kilometres of permanent contraflow lanes along main roads for buses, mini bus taxis and car pools will be introduced in 2016. This can reduce travel in peak hours for public transport users by up to 30 minutes.

Due to the distances of commuting and Johannesburg's topography, the number of commuters who chose to cycle remained low. I am sure that there is a potential for people to use non-motorised and small electric vehicles, but it requires such vehicles to become better known and available to the market. In addition, Johannesburg needs to designate and protect urban long-distance cycle ways.

The festival legacy projects include the construction of wider pavements and dedicated cycle lanes along Sandton CBD main streets and the creation of new cycle lanes between the Sandton CBD and neighbouring districts. The construction of a 5-kilometre cycling and walking lane between the township of Alexandra and the CBD will be completed by mid-2017 to provide



By **Konrad Otto-Zimmermann**,
Creative Director, EcoMobility World
Festivals

The festival reduced the percentage of private car usage in Sandton by 22 percent during the month

a safe and dignified route for 10,000 commuters who walk the distance daily.

When presenting the outcomes of the EcoMobility Festival, Executive Mayor Tau pointed to another significant achievement: "We proved that the streets of Johannesburg truly belong to all our citizens and that with innovation and imagination we can turn streets into amenable public spaces."

The next staging of an ecomobile neighbourhood will take place in Kaohsiung, the second-largest city in Taiwan. Having visited and witnessed the Suwon and Johannesburg projects, the Kaohsiung city leadership can draw on the experiences of the preceding events and present the vision of a car and motorcycle-free city during the 3rd EcoMobility World Festival in October 2017. ■



Photo: Sister Cities International

By **Anastasia Dellaccio**, Director of Communications and Marketing, Sister Cities International

The story of humanity is a story of cities. Most of our history has been written in cities—they have inspired art, wars have been launched over them, and peace has been won and celebrated within them. Cities are centres for knowledge sharing, creativity, and innovation. The connections that come between cities and the people that live within them are an engine which can fuel the new green economy and are essential in developing new solutions to rectify some of the by-products of climate change, the destruction caused by natural disasters, and the problems that come with increased urbanisation.

This past year marked a monumental breakthrough as representatives from 195 countries gathered in Paris for the COP21 realising a major diplomatic feat by negotiating and achieving consensus on a historical climate change agreement. Sister Cities International was part of a galvanising force along with dozens of other like-minded organisations that banded together as part of Earth to Paris, a movement led by the United Nations Foundation, which helped to raise awareness and support for the

Why subnational diplomacy can drive climate action

negotiations. However, at this particular convening, it was not only the leaders of these 195 countries making waves, but the mayors who were there representing cities around the world. Groups like C40 and the Compact of Mayors at moments stole the show by working to establish a common platform where cities can work as a collective to capture their impact through standardised measurement of emissions, climate risk, and overall accountability.

Cities' many businesses, dense populations, and reliance on various forms of polluting transport mean cities' activities account for more than 70 percent of energy-related CO₂ emissions, a number which will continue to grow as urbanisation continues to explode across the globe. New buildings will need to ensure they remain green and energy efficient, ailing infrastructure will need sustainable repairs, and as the destruction of natural disasters becomes ever more pervasive, money must be invested to ensure resilience. Cities' need to reduce pollution has a direct impact on health, health care costs, quality of living, attraction of private capital and human resources. The costs of global greenhouse gas emissions will indelibly continue to weigh on cities as costs are estimated to reach US\$80 billion to US\$100 billion per year as cities scramble to adapt to the by-products of climate change.

Because of our networked and integrated world, city programmes can now address emissions beyond their geographical area by working through institutions that bring them together as a collective to share best practices. Organisations like Sister Cities International connect cities around the world so that they can work at subnational levels to not only create innovations from within but to also export them or work with other cities to perfect them. This collaboration is mutually beneficial both environmentally and economically.

Many sister cities share similar environmental challenges and therefore problems faced by cities such as Charlottesville, Virginia, and its sister city of Besancon, France can be confronted as they continue to leverage their partnership to discuss solutions related to the ever-increasing threat of natural disaster. Anderson, South Carolina, and its sister city, Carrickfergus, Northern Ireland both share ports that can be economic drivers and potential hazards, and both have shared best practices and are working together to create collective resolutions.

The outcomes of the Paris COP21 are paving the way for a new set of global actors, and cities have a major role to play

Drivers of innovation like San Francisco and Bangalore have created their partnership around developing sustainable solutions through the exchange of environmental, economic, cultural and research ideas and expertise. Despite this progress, more needs to be done to ensure that cities are continuing not only to innovate but to export their good ideas into actions that are good for the environment and for the global green economy.

The outcomes of the Paris COP21 are paving the way for a new set of global actors, and cities have a major role to play. In this global landscape, national governments may be creating the blue print for the 'what' as it relates to climate change, but cities are the entities that will be responsible for taking this blue print beyond a simple foundation and turning it into a soluble and sustainable structure. ■

SuRe®: a new global standard for sustainable and resilient infrastructure

The demand for infrastructure development and upgrade is extremely high globally and is constantly rising due to increased urbanisation and population growth. This can be seen particularly in emerging and developing countries, however also in industrialised states there is a need for infrastructure development, including modernisation.

There is an apparent abundance of liquidity in recent years, notably in developing and emerging countries, however, this is failing to translate into more infrastructure investments—especially in emerging nations.

The tragic bursting of a dam in Minas Gerais in Brazil at the end of November last year shows how catastrophic the consequences of infrastructure projects can be if information is not available or neglected. Hence, on the one hand there is a lack of finance for infrastructure, and on the other there seems to be a lack of sustainable projects worthy of investment. What can we do to improve sustainability and resilience in infrastructure projects and how can investors' trust be gained to improve the availability of finance?

This is one of the questions that drives our work at the Global Infrastructure Basel (GIB) Foundation. The foundation aims to push for transformative actions in the field of infrastructure development and finance to contribute to sustainable development and the strengthening of community resilience. In our vision, infrastructure does not only deliver its service efficiently, but also in a way that helps tackle the world's largest sustainability challenges stemming from population growth, rapid urbanisation, social inequalities, excessive

use of finite resources and carbon-intensive lifestyles.

As a result, GIB and the French investment bank, Natixis, developed SuRe®—the Standard for Sustainable and Resilient Infrastructure—by including the valuable expertise of multiple stakeholders from developing and industrialised countries. Launched at COP21 in Paris, SuRe® is a global voluntary standard which integrates the key criteria of sustainability and resilience into infrastructure development and upgrade, through 14 themes covering 76 criteria across environmental, social and governance factors. The standard aims to establish a common language and understanding of sustainable and resilient infrastructure projects between project developers, financiers, and local authorities. It provides guidance on how to manage those aspects from both a risk management and a benefit creation perspective, and starting from as early as possible in the project's life cycle. As such, SuRe® can be used to leverage private and public investments in infrastructure in a way that ensures cost-effective access to critical services while strengthening resilience, maximising social benefits and limiting the environmental footprint.

SuRe® applies to different types of infrastructure projects and relies on independent verification and certification by third parties. It is meant to be user-friendly and to facilitate the clear communication of a project's macro-benefits while enabling project comparability. SuRe® builds upon existing work by advancing sustainability standards and is based on GIB's 'Grading for Sustainable Infrastructure' which has been used since 2012 as a self-assessment tool for over 150 infrastructure projects.



Photo: GIB

By **Hans-Peter Egler**,
CEO, Global Infrastructure Basel

For the public sector, SuRe® is of particular use in that it helps to set procurement criteria, project requirements and selection criteria for the preparation of guidelines for the public procurement process and the initial design requirements of sustainable and resilient infrastructure projects. It also provides a tool for comparing and selecting projects which in turn supports a more efficient use of limited public resources. In addition, a recently performed desktop study, by an independent certifier, tested three UNFCCC registered projects against the SuRe® criteria and revealed that projects using the standard's criteria improve project management and information transparency, and detect their chances and risks much earlier in the project life cycle. Thus, applying SuRe® leads to a high information yield for the projects themselves, for investors and for public authorities. It can therefore ultimately optimise efficacy and efficiency of multi-stakeholder urban planning processes. ■

For more information on the SuRe® Standard see:
www.gib-foundation.org/sure-standard/



US Ambassador to France, Jane Hartley, addresses mayors and attendees at a COP21 reception flanked by US Conference of Mayors' CEO Tom Cochran and USCM President Stephanie Rawlings-Blake, Mayor of Baltimore

Photo: USCM



On 29th November, on the eve of the COP21 climate change talks in Paris, 22,000 shoes were placed in Place de la République. The shoes represented the hundreds of thousands of people who were denied the chance to 'March for the Climate' due to the terrorist attacks that occurred in Paris earlier that month.

Photo: Getty Images / Gordon York Times



Mauricio Macri, Mayor of Buenos Aires from 2007 to 2015, won elections held in October 2015 and was inaugurated as Argentina's President in December

Photo: Mauricio Macri



Over six hundred mayors converged on Paris Town Hall for the Climate Summit for Local Leaders on December 4 2015

Photo: Mike Bloomberg / Climate Summit for Local Leaders



Photo: Mike Bloomberg

City leaders present the Paris City Hall Declaration to Ban Ki-moon

Cities deliver climate pledge to UN Secretary-General

Cities came together at the Climate Summit for Local Leaders in Paris Town Hall, on the sidelines of the COP21 talks, to declare that they will deliver annual reductions of 3.7 gigatons in greenhouse gas emissions by 2030.

Anne Hidalgo, Mayor of Paris and Michael Bloomberg, Special Envoy to the UN Secretary-General for Cities and Climate Change, co-hosted one of the largest ever gatherings of mayors, with international city associations ICLEI, United Cities and Local Governments (UCLG), the International Association of Francophone Mayors and C40 Cities bringing together their members under one roof.

Paris is a member of all four associations and Hidalgo worked tirelessly, moving between the different chambers housing the associations' concurrent meetings, to emphasise how cities are united in their action on climate change.

"The participation of mayors from all over the world is impressive with all the major city networks and that participation is a success in itself," Hidalgo told *Cities Today*. "All of us are aware of our responsibility and we are already engaged in finding solutions for construction, transport and buildings. There has been a dialogue for some time between the mayors of the global north and those of the global south and this meeting will be a success because all the mayors speak with one voice."

Hidalgo said cities have 50 percent of the solutions in their hands to limit the rise of temperatures on the planet and that UN Secretary-General Ban Ki-moon had recognised the importance of cities in tackling climate change, even if cities still have no formal role in the negotiations, by inviting mayors to mobilise and engage politically at the UN conference in September 2015.

"We are the expression of democratic power and the Secretary-General has understood that," added Hidalgo.

Six hundred and forty mayors gathered at Paris City Hall and during the afternoon session, the Mayor of Paris led the presentation of a pledge to the UN Secretary-General.

The Paris City Hall Declaration binds city leaders to produce resilience strategies and action plans by 2020 to adapt to climate-related hazards; to deliver 3.7 gigatons of urban greenhouse gas emissions reductions annually by 2030, which is 30 percent of the difference between current national commitments and what is needed in terms of reductions to avoid a rise of 2 degrees in global temperatures; and to support climate goals including an 80 percent reduction in greenhouse gas emissions by 2050. ■

Ten cities win global awards for climate action



Photo: C40

The 10 cities received their awards at a special ceremony held in Paris

Ten cities were recognised for their leadership in tackling climate change across key sectors at the third annual C40 Cities Awards held during the COP21 climate talks in Paris.

A jury panel, headed by Felipe Calderón, former President of Mexico, selected 10 cities from 33 finalists. According to recent C40 research, members have taken 10,000 city climate actions since the last major COP in Copenhagen.

"As leaders from around the world meet in Paris to agree binding emission targets, the efforts of these 10 award-winning cities remind us that innovation drives results, and concrete solutions and actions—that improve the health, well-being and economic opportunities of urban citizens—can be implemented right now," said Eduardo Paes, Mayor of Rio and C40 Chair.

Winning cities were recognised for a diverse set of ambitious policies, projects or programmes, including Vancouver's Greenest City Action Plan, which sets a roadmap for it to become the greenest city in the world by 2020, and Wuhan's ecological restoration of one of the city's largest landfill sites.

Winning cities were recognised for a diverse set of ambitious policies, projects or programmes, including Vancouver’s Greenest City Action Plan, which sets a roadmap for it to become the greenest city in the world by 2020

On accepting Boston’s award for Smart Cities & Smart Community Engagement, Austin Blackmon, Chief of Environment, Energy, and Open Space, Boston, said: “We’re honoured to be recognised as a climate leader for our work with Greenovate Boston, especially on a global stage. We have a lot to learn from other cities for their innovative and ambitious climate solutions. And that’s exactly why we’re here—to share and learn.”

Blackmon also revealed that the city is now fully compliant with the Compact of Mayors—a global coalition of

mayors and city officials committed to reduce local greenhouse gas emissions.

The winners in the ten award categories were: Boston (Smart Cities & Smart Community Engagement); Cape Town (Adaptation Implementation); Johannesburg (Finance & Economic Development); Nanjing (Transportation); New York (Building Energy Efficiency); Rotterdam (Adaptation Planning & Assessment); Stockholm (Sustainable Communities); Vancouver (Carbon Measurement & Planning); Washington, DC (Green Energy); Wuhan (Solid Waste). ■

Mayors pledge 10 percent of budget to resilience strategies

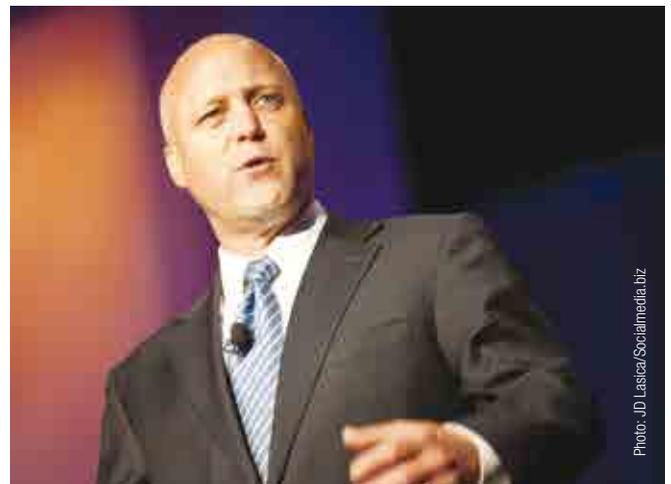
Twenty-one mayors pledged US\$5.2 billion to fund resilience strategies by signing up to the 10% Resilience Pledge at the COP21 conference in Paris in December.

Mayors from cities such as Mexico City, New Orleans, Paris and Rio de Janeiro will dedicate the equivalent of 10 percent of their city’s annual budget towards defined, resilience-building activities throughout their term in office.

The 100RC definition of resilience includes not just the shocks—like earthquakes, fires and floods—but also city stresses that occur on a daily basis

New Orleans Mayor Mitch Landrieu commented: “A resilient city must not only be prepared to address the environmental challenges that the world is facing, but also the longstanding, generational issues around crime, education and income inequality so that no one is left behind.”

The 100 Resilient Cities network (100RC, a Rockefeller Foundation initiative) which backed the 10 percent pledge, helps cities fund and plan strategies that will make cities more resilient. All resilience projects must accomplish more than one goal with a single intervention to qualify for support. 100RC believes this forces cities to think more efficiently about resilience.



Mitch Landrieu, Mayor of New Orleans

For example, one of the major goals of New Orleans’ resilience strategy is to improve resilience to climate change. To do this, it needed engineers. It also has a problem with high unemployment, so it teamed up with Delgado University to train several thousand new engineers, solving two problems with one initiative.

The 100RC definition of resilience includes not just the shocks—like earthquakes, fires and floods—but also city stresses that occur on a daily basis. This might mean high unemployment, an overtaxed or inefficient public transportation system, endemic violence or chronic food and water shortages. The 100RC network argues that addressing these issues should help cities to attract more investment as better places to work and live.

100RC provides all the cities that have signed up to the pledge with the resources to hire a resilience officer and plan a resilience strategy. This is an extensive process, which could take up to nine months, and will involve all city stakeholders in a plan that ticks the dual or triple purpose boxes laid out by the 100RC network. ■

City of Paris launches its first green bond

By **Beate Sonerud** and **Katie House***

Paris has joined other cities such as Gothenburg and Johannesburg in launching its first green bond, which hit the markets in November just ahead of the UN Climate Change Conference (COP21).

“We started thinking about issuing a green bond about two years ago,” explained Xavier Giorgi, Head of Funding for the City of Paris. “After actively following the growth of the market for a while longer, we decided to go ahead with the issue at the end of 2014.”

The idea was first suggested by the financial department because of the benefits of investor diversification of green bonds compared to non-green bonds. “We were really keen to get investor diversification—it’s become more and more important for

us when raising capital,” said Giorgi. The city government was also looking to get better funding rates, and they had seen the costs involved in issuing a green bond decrease.

The City of Paris also saw a green bond issuance linked to their climate plan as a good way to show their commitment to implementing the plan. Linking the green bond to the climate plan was also important to indicate that the green bond was not just a marketing ploy for COP21, but part of a longer-term strategy.



Photo: XG

Xavier Giorgi, Head of Funding, City of Paris

Assets selected on the basis of the city climate plan

Projects which would benefit from the bond proceeds were selected to reach the aims of the climate plan in reducing emissions, reducing energy consumption, increasing the use of renewable energy and adapting to climate change.

“Everyone in the operations department was keen for their projects to be included in the green bond, and would approach the finance team with lots of possible options,” said Xavier.

Aligning the green bond projects with the city climate plan already offered investors some comfort with the robust environmental credentials of the bond. But, as a newcomer to the market, Paris decided to get a second party review of their bond by Vigeo to make sure everything was done correctly and to reinforce investors’ confidence.

The thorough work Paris did with their green bond paid off in attracting investors. “Typically around 30 investors would be at a road show, but for the green bond we had nearly 100,” Giorgi told *Cities Today*. “They were also really engaging with the bond,

and had some very technical questions.” The strong internal interest in the bond meant people from different departments were present for the roadshow—a first for the city—and different internal experts could answer, increasing investor confidence further.

In the end, the green bond achieved the investor diversification Paris had been looking for with 40 percent of the investors new for the city. They also got a better geographic spread, with investors from across Europe, branching out from their normal French-dominated investor base. Some of the investors were interested specifically because the bond was green.

The additional work generated significant benefits

Doing a green bond was more work relative to non-green bond issuance, but Paris found the positive returns more than outweighed the costs. “The main cost is the time it takes when you haven’t done a green issuance before, and the people you have to use to get the issuance done,” explained Giorgi. “It probably took the equivalent of six months of work for one person but the returns were worth it.” Xavier emphasised that a significant amount of the extra work for the first green bond issuance will be a one-off, so the costs will be significantly lower for any future green bond issuances when many of the processes are already in place.

Paris was pleased with the benefits they saw. In addition to the investor diversification, there was a lot of collaboration between departments—in particular the finance and operations

teams—in the process of issuing the bond, which was beneficial for in-house communications. The green bond also got public attention. “This never happens with regular vanilla bonds,” said Giorgi. It even attracted the attention of the Mayor and other politicians, who all got behind the bond.

City of Paris green bond

Settlement date: 18 November 2015

Size: €300 million (US\$321.5 million)

Tenor: 16 years

Coupon: 1.75 percent

Rating: AA by S&P and Fitch

Underwriters: Credit Agricole CIB,

HSBC, and Societe Generale

Second party review: Vigeo



Photo: Benjamin Staudinger

Linking the green bond to the climate plan was important to indicate that the issuance was not just a marketing ploy for COP21

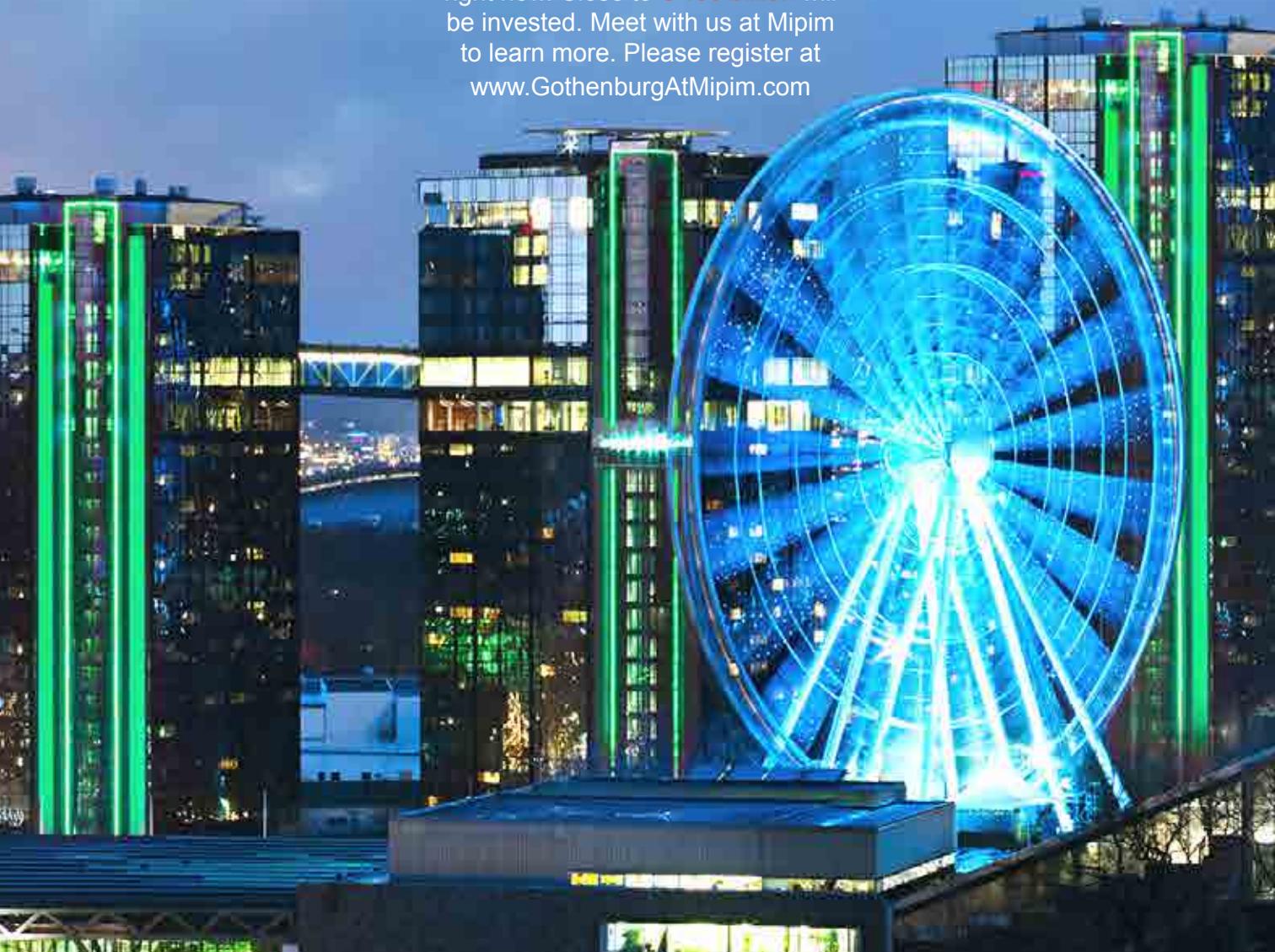
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The operational departments will be responsible for post-issuance reporting on their specific projects that they are already in charge of. “Many of those responsible for the eligible projects actually suggested themselves that they would do the reporting. So it’s not expected to be burdensome,” added Giorgi.

Given the positive experience with their inaugural issuance, Paris is keen to come back for more. The City recognises that the first issuance requires the most work so it will be a simpler process next time round.

They plan to wait until they have done one round of reporting before issuing a second green bond, so they will have experience with all the different aspects of green bond issuance before re-issuing. After that, the City of Paris hopes to issue on a yearly basis. ■

*Beate Sonerud is Policy Analyst and Katie House is Research Officer at the Climate Bonds Initiative.



Wuhan has increased its green spaces through land regeneration at the Jinkou landfill site

Wuhan wins C40 and UN awards

By **Yan Tian, Weibin Chen, Yan Peng,**
and **Guangjie Zhao***

2015 was a successful year for Wuhan crowned by the city winning a C40 Climate Leadership Award in December. The city’s mayor Wan Yong attended COP21 in Paris as part of a delegation representing developing cities from China, and confirmed Wuhan’s commitment to low-carbon development when he was presented with the C40 Climate Leadership Award in the category of Solid Waste Management by Eduardo Paes, Mayor of Rio de Janeiro and Chair of C40. Wuhan also received international recognition by winning the 2015 Chinese Sustainable Development Cities Award from UNDP.

The awards have confirmed Wuhan’s innovative and assertive approach for ‘going low-carbon’ since 2007 when the Chinese Government mandated the city to work towards a model society featuring resource conservation and environmentally friendly actions (*liang-Xing-She-Hui*). In 2012, the Chinese Government approved Wuhan, along with 41 other cities, to become a low-carbon pilot city; and in 2014, Wuhan and Shenzhen formally joined C40 as full members reporting their low-carbon data.

In the last year alone, Wuhan has stood out with innovative actions. One of these includes the Wuhan Research Centre on C40 Cities Low Carbon Actions (The Centre), established in January 2015, which is mandated to work around three aspects:

1. Representing the Wuhan city government in communicating and sharing experiences within C40;
2. Providing technical guidelines and policy recommendations related to low-carbon development planning, low-carbon standards, GHG emission inventory monitoring, through studying and screening best low-carbon practices in other megacities; and
3. Building and becoming a knowledge hub of international best practice on low-carbon development for the central China region and the country as a whole, through both an online platform and a permanent office in Wuhan.

In November, Mayor Yong hosted the C40 Cities Climate Leadership Group’s annual technical thematic workshop—the first C40 workshop to be held on mainland China. Wuhan is the first city, among the 75 C40 member cities, that has dedicated resources to a formal team to facilitate these learning processes and actions.

In 2014, when Wuhan joined C40 and was invited to apply for the awards, the city team did not accept the invitation. The rationale was that Wuhan’s low-carbon actions were either incomplete or not good enough for an award. This rationale reflects a typical East Asian thinking, to only consider sharing when things are done to a satisfactory level.

Through the entire year of working with C40 and with the support of the Centre, Wuhan realised that sharing can take place at any point in time and at any stage of a project. Therefore Wuhan submitted entries into three categories of the C40 Awards. Two projects went into the finals, with one eventually taking an award—the Jinkou landfill project.

Solid waste management is a big challenge for most Chinese cities. The Jinkou landfill site was opened in 1989 and closed in June 2005. Due to issues with the design and technology at the time, safety standards were low and, after the landfill was closed, environmental issues began to surface, including gas pollution, liquid infiltration and damage to the landfill site landscape. The context made the restoration project even more challenging than normal.

The Jinkou project transformed the waste landfill site into an ecological exhibition site with strong science and technology research and education functions. It demonstrates the concept of re-utilisation of land to become a garden and park. The city hopes it will become a model for regeneration and reutilisation of land by demonstrating a number of innovations:

1. It is the first large waste landfill in the Yangtze River region that encompasses aerobic ecological restoration.
2. It is the first waste landfill in the world converted into a garden expo.
3. It is the largest household waste landfill that has been ecologically restored.
4. Aerobic restoration has stabilised the waste landfill, eliminated pollution, and re-utilised the land.
5. And no secondary pollution was produced in the project implementation.

This year also holds great expectations in China. It is the first year of the 13th Five Year Plan, which runs from 2016-2020. The five-year plan is a unique planning strategy in China in its political, economic and social development. The first year of a five-year plan sets the tone. Challenges are identified as the basis for setting priorities, and the opportunities for trying new things or scaling up existing good practices. The Wuhan People's Congress will announce their priorities in the coming months. Wuhan still

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enjoys a high proportion of heavy industry in its economic structure and wants to provide both stable economic growth and carbon emission reduction at the same time. How will it achieve this? The city is keen to explore more efficient and sustainable paths while taking action to make Wuhan 'different every day'. Other cities in the world, especially fast growing developing cities, might experience similar challenges and find it useful to work with Wuhan's Centre on approaches to these challenges. ■

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How European mayors are tackling the migrant crisis

The influx of refugees has tested the resilience of cities to develop both short and long-term strategies to cope with their new residents. **Kirsty Tuxford** highlights the problems that European cities are facing and asks mayors how migration will affect long-term development





Photo: Canonman29 Dreamstime.com

Images of dishevelled migrants arriving in Europe on overcrowded boats, with tiny children clinging desperately to them have grabbed the world's attention. The plight of these desperate people as they trudge across Europe in search of a new home has been covered widely in the media from a humanistic point of view, but what about the cities where they end up? How does a city administration cope with such an influx of displaced people?

“Addressing migration surges at a local level can be daunting,” says Dan Lewis, Chief of the Urban Risk Reduction Unit, and Head of the City Resilience



Dieter Reiter, Mayor of Munich

Profiling Programme at UN-Habitat. “Once refugees and other migrants arrive in destination countries, local governments are expected to provide resources, management, and financial commitments to support them.”

UN-Habitat's City Resilience Programme seeks to build local governments' capacity to absorb and recover quickly from the impact of all plausible shocks and stresses. The methodology involves using a systems approach to test this capacity against environmental, social and economic risk, and recommending measures to adjust the physical, functional, organisational

and spatial aspects of a city to create or improve its resilience.

With migration, the potential for uneven standards of service, potential ethnic or economic isolation, and rapidly dwindling resources in hosting cities is high. Alternatively, if cities are working to their best, local governments and hosting communities can more effectively build on the social, political and economic resources new migrants bring to their cities, to establish common standards of service and resettlement options.

“These standards of service include at a minimum: community sensitisation and mobilisation; human resource needs; infrastructure needs; services; funds and finance; protection; livelihoods; and ongoing monitoring,” says Lewis.

Finding the resources to cope

In 2015, EUROCITIES published an asylum statement which identified that cities throughout Europe face differing challenges depending on whether they are cities of arrival, transit or destination.

“They all have a particular role to play in the guarantee of basic protection to asylum claimants and in the reception and integration of newcomers in our society,” says Anna Lisa Boni, Secretary General of EUROCITIES. “Although individual practices depend on the local context, resources, and competences, generally speaking European cities have had to collaborate with NGOs and volunteers, set up coordination teams across city departments, identify and acquire available public buildings, collaborate with private landlords, and set up basic services in temporary camps.”

Towards the end of 2015, the United Nations High Commission for Refugees, reported that around 680,400 people had arrived in Europe that year alone from crisis regions. Estimates say that by the end of 2015, Germany, Austria, Hungary, Sweden, the Netherlands and Finland had received 1.3 million asylum applications.

Seeing such applicants as new citizens able to contribute to an improvement to a city's development is a view which has been espoused by many European mayors facing up to migrants moving into their cities.

“I don't think about numbers, only refugees' safety,” says Dieter Reiter, Mayor

of Munich. More than 39,000 asylum seekers and migrants have arrived in the city since the start of September 2015, but preparations were being made long before that. Facilities include a temporary reception and medical centres, special bus and train services, and a makeshift-processing centre near the train station. At the centre, police distribute water, and officials and volunteers register asylum seekers and offer information. Funds of €1 million have been donated by the city's football club, Bayern Munich, to help support the city's efforts. Most importantly, the city operates a policy of long-term integration for newcomers



Karin Wanngård, Mayor of Stockholm

and is nurturing the idea of a ‘welcome culture’. Studies have been undertaken to measure the public's perception towards migration and multiculturalism, and just under 90 percent of residents with or without a migrant background feel ‘comfortable’ to ‘very comfortable’ with Munich's multicultural society.

Thousands of refugees are passing through Vienna en-route to German cities like Munich. In July 2015, Vienna's city administration set up the ‘Coordination centre for refugees in Vienna’ which serves as a central information point maintaining close contact with the Austrian train company, the police,

several NGOs, such as Caritas and the Red Cross, and groups of volunteers. In cooperation with the Vienna Social Fund, the city has also created a mobile app, available across all platforms, a website and a telephone hotline to keep the public informed with relevant information.

Between 7-13 September Utrecht had to respond within 24 hours when 4,200 asylum seekers arrived in the Netherlands. Thanks to the city's Human Rights Coalition comprised of city authorities, civil society organisations and volunteers, from 16 September hundreds of asylum seekers—mainly men from Eritrea and Syria—were housed in city-managed emergency shelters. Families were housed elsewhere. Hot meals, mattresses and sanitary facilities were available immediately. “These emergency reception measures are part of the long tradition of Utrecht as a human rights city,” says Margriet Jongerius, Deputy Mayor of Utrecht. “It is heart-warming to see that people and organisations in the city also want to contribute.”

Boni of EUROCITIES says that integration economically is key to adaptation to the shocks from migrant flows. “Cities have a lot to lose from policies that consign asylum seekers to deprivation and exclusion or that put them at risk of becoming victims of abusive employers and landlords, smugglers, human traffickers and organised crime,” says Boni. “This is why we asked in our our ‘Integrating Cities Charter,’ that all asylum seekers are allowed to work immediately after registration, as is now the case in Germany.”

A case in point is Dresden which by the end of October 2015, had received 5,500 asylum seekers.. “We want to start as early as possible to avoid that people get a feeling of being sidelined,” says Dirk Hilbert, Mayor of Dresden. “Integration in the job market or in the education system is one of the most successful ways to integrate into our society.

Unemployment, lack of training and no knowledge of the German language have the opposite effect.”

But integration, provision of housing and emergency set-up centres require resources when cities are already under financial pressure. According to

EUROCITIES, often the emergency measures put in place by cities are financed at their own cost, without support from the national or the European level. In the network's asylum statement, they requested that cities should be included, alongside national governments and NGOs, in the list of bodies that are eligible for emergency financial assistance in responding to migratory pressure.

“City budgets have been heavily affected by severe budgetary cuts, and resources allocated to social services are often the first to be cut,” comments Boni. “But city authorities should also be much more involved in decision making

Denmark has adopted powers to take away the personal property of migrants. And in Sweden while the national government has taken measures to impose border controls on the bridge linking Malmo to Denmark, Karin Wanngård, Mayor of Stockholm, says that the price of accepting migrants is one the city must pay.

“Of course there is a cost in all of this, but Stockholm has a strong economy and will be able to manage,” says the mayor who argues that European Social Funds should be applied for the integration of refugee children. “From a long-term perspective, once people learn the language and enter the labour market,



Migrants crossing the Serbia-Croatia border en route to north-west Europe

Towards the end of 2015, the United Nations High Commission for Refugees, reported that around 680,400 people had arrived in Europe that year alone from crisis regions

regarding the design, implementation and use of integration funding within the Asylum, Migration and Integration Fund (AMIF) [a €3 billion fund set up by the European Union]. There cannot only be consultation, there is a need for a true partnership.”

the population growth will greatly benefit Stockholm's economy. We also have a large number of people reaching retirement age in the next decade, and we need to fill these positions, this is especially true when it comes to sectors such as schools and elderly care.”



In Germany, refugees can find work as soon as they are registered

Mass migration has not acted as a shock to urban systems since the second World War but city leaders are having to quickly adapt and absorb the effects of migrants coming to Europe

Stockholm has received both refugees who are transiting, and those who have stayed. “It is hard to give an exact number, but to give an estimate, in December Stockholm had almost 9,000 refugees registered,” says Wanngård “Between October and November 2015, 3,883 children arrived at Stockholm Central station.”

As Swedish cities struggle to cope, the national government has now reversed its open-door policy for refugees with Prime Minister Stefan Löfven saying: “We cannot do any more” when announcing last November that his country would revert to the EU minimum. Stockholm’s mayor says her city is still able to accept migrants but understands the reason for the national restrictions.

“Stockholm has a good capacity and professional organisation that is well suited to handling the current situation,” says Wanngård. “At the same time, other cities and parts of Sweden operate under different circumstances, so I have full confidence that the government, having to look at the country as a whole, has

acted in a way that they need to do, based on their analysis of the situation.”

Istanbul a magnet for Syrian refugees

Of those fleeing because of the Syrian conflict, only a small percentage make it to western Europe—the UN has registered over 4 million Syrian refugees in Turkey, Lebanon, Jordan, Iraq, Egypt and North Africa.

There are more Syrian refugees in Istanbul than in the rest of Europe combined. While poorer refugees require support from the city, wealthier and more educated Syrians are setting up businesses in Turkey’s largest city—750 in the first half of 2015 according to reports. However, Turkey’s Interior Ministry says that Syrian refugees have relocated to 72 of the country’s 81 provinces.

“With the Interior Ministry’s decision in October 2011, registered Syrian refugees are given temporary protection status under the temporary protection regime,” explains Adem Yavuz, Acting Director of Foreign Affairs

in Beşiktaş, a district municipality of İstanbul. “Protection and aid is provided to Syrians, covering regulations on indefinite residence, protection against going back under coercion, and responding to emergency needs.”

Despite the ability of refugees to help themselves, Beşiktaş is facing difficulties. “It has very limited authority and power for coping or helping Syrian refugees,” adds Yavuz. “Other municipalities such as İstanbul Greater Metropolitan Municipality, Gaziantep, Şanlıurfa, Kilis, Hatay, Adana, Osmaniye, Kahramanmaraş, Mersin and Konya have an intensive refugee population and more authority to cope.”

Mass migration has not acted as a shock to urban systems since the second World War but city leaders are having to quickly adapt and absorb the effects of migrants coming to Europe. The key as EUROCITIES’ Secretary-General makes clear is to anticipate and prepare the city for such effects.

“[Cities need to be] open, inclusive, pragmatic and taking a longer-term perspective. Within our network, we have seen cities which are as yet unaffected by the refugee crisis taking the necessary steps to prepare. Gdansk in Poland, is an example,” says Boni.

As with all resilience plans, there is no one-size-fits-all for cities but UN-Habitat has defined a framework of value principles in terms of managing the influx of migrants which include: a balanced distribution of host families; translation of state commitments to a local level; allowing refugees to seek self-reliance; host community engagement; including refugees as part of the solution; seeing people as assets; and mitigating the security risks from unregulated refugee flows.

“Integrating measures and addressing the social and economic impacts on city functions and organisations helps ensure the city ‘system’ remains intact or even improves for all its citizens and contributes to its resilience over the longer term,” says Lewis ■

Thank you to EUROCITIES for the facts and figures regarding specific cities in this article

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Interview: Michael Berkowitz

Michael Berkowitz, President of the 100 Resilient Cities network, met with **Tom Teodorczuk**, at their offices in New York to talk about the new 10 percent resilience pledge and the selection of the final 33 cities that will join the network in April



Michael Berkowitz, President, 100 Resilient Cities

2015 seemed a particularly busy year for 100 Resilient Cities. New York and New Orleans released their Resilient Strategies, you hosted the first ever Resilience Day at COP21, and launched The Resilience Pledge.

True. 100 cities is a lot. Even though we only have 67 cities so far, there are 40 different countries speaking 24 languages. That's one aspect why the pace has been so frenetic. Another aspect is people are beginning to realise that resilience is a really important concept and resilience being as broad as we define it means there are different kinds of partners who need and want to play a role in cities.

100RC seeks to build resilience in cities by tackling stresses, not just shocks. Can you elaborate on this distinction?

We're now reading the third round of applications from cities and they tend to be shock-focused. Lots of times cities come in with this perspective that resilience is about surviving the next

hurricane, tornado or terrorist attack. But what's interesting—and this has resonated with cities—is understanding where the intersection between the shocks and the stresses is. For example, Paris applied to our programme in 2014 with a very environmental agenda. They saw COP21 coming and Mayor Hidalgo is an environmentally focused mayor. Then the terrorist attacks in 2015 happened. Now, there was an opening for Paris to think about how to re-architect itself in ways that both reduces pollution and flooding potential and integrates new immigrants.

It's tempting to think that Paris and New Orleans provide examples of how very bad things need to happen to cities in the short-term for them to achieve lasting long-term reform.

I'm not sure I would agree. The Chinese words for crisis and opportunity are very similar and this is what you're alluding to. New Orleans' risk factors are not

just that their water is at, or below, sea level through most of the city. That is an important risk factor but the other risk factors around Hurricane Katrina and climate change have to do with the fact they have huge poor populations that are not well integrated into society and they had for many generations corrupt and inept government that people didn't trust. That is changing now but that legacy continues. Those stresses made New Orleans more at risk to climate change and hurricanes as much as rising sea temperatures. Partly why cities are so at risk to climate change is not just that the climate is changing. It's also that cities are changing.

So 100RC takes a long-term approach towards reforming cities?

That's an accurate reflection. Cities often say to us we are fighting fires all the time. Part of that makes cities compelling to work with because unlike national governments, mayors are on the hook for collecting the trash, fixing the potholes and keeping crime down, doing these really practical things. That also makes them much more short-term oriented because every day there is a new crisis of the moment. One of the things the Chief Resilience Officers are trying to do is institute some of this longer-term planning so that cities can progress over generations. The countries that have done it best, like Singapore or in Northern Europe, the Dutch or the Danes or the Swedes, all have longer-term development plans which they have been faithful to over the course of different administrations.

How did the 10% Resilience Pledge come about?

It came up because we were pushed by the Mayor of Mexico City to think

about something the mayors could commit to. We came up with this idea of the ten percent pledge. It's put resilience thinkers together with budget people and that's a marriage that doesn't happen in cities.

Was it difficult to convince mayors to commit to more expenditure on the Resilience Pledge?

No. I thought I was going to have a harder time than what actually happened. 22 cities have signed and I expect over the next six months we'll have a much higher percentage. As the Mayor of New Orleans said to us, if we're doing this right 10 percent is a minimal threshold. For him resilience is solving transportation and poverty and public health as well as urban flooding.

Can you talk more about the process of how resilience strategies evolve in practice?

It's interesting that they result in cities putting things that used to sit in different silos together in a single strategy. To give you an example from the New York strategy OneNYC, what that plan did was to say we have a goal, using metrics, to have all New Yorkers live within a 40-minute sustainable commute of a good job. But what that also did was put the mayor's sustainable transportation plan Vision Zero and his huge housing initiative together with economic development. You began to see how the three actually work together and complement each other in ways that otherwise would not have happened. All of a sudden you're starting to think not just about better transportation to get people to their jobs more quickly but about diversifying the economic centres of New York so they're out of midtown and downtown where they've always been and putting them in downtown Brooklyn, Flushing, Queens, or in the Bronx. That's great for resilience—it gives more sustainable economic development to people closer to where they live but it also diversifies so if midtown or downtown New York experiences a disaster, there are other economic centres that can continue to carry the load.

But how is the strategy and planning affected by the day-to-day, unforeseen, external shocks that occur in cities?

In the 1990s I was the Deputy Commissioner of Emergency Management in New York and spent my time planning for hurricanes. Then two planes flew into two buildings. Trying to guess what the hazard is going to be is sometimes a fool's errand. But you do have to know what your hazards are and whether you're at risk to hurricanes and storm surge and coastal flooding. But over-emphasising that is not useful for cities. Who knows what the next thing is going to be? If you were in Los Angeles in the late 1980s, you didn't have to know that Rodney King was going to get beat up by cops and it would be captured on film. You could have looked at lots of

100RC is a distribution network. Our point of view is that cities are not taking advantage of the good solutions whether that's funding, best practice or new technologies

other factors to know you were at risk from something happening like that—dislocated communities, high crime, poor trust of the institutions of government, or a bad transportation system.

100RC is pioneered by the Rockefeller Foundation. How do you fit within the foundation's overall umbrella?

It's hard to see this given we're located here in New York but we're a separate NGO. We are hopefully going to exist for many years beyond our initial tranche of funding because we're committed to partnering with cities over a generation or more. That's how resilience will be built.

It seems that partnerships are fundamental to 100RC?

100RC is a distribution network. Our point of view is that cities are not taking advantage of the good solutions whether that's funding, best practice or new technologies. If you think about what 100RC is, it's 100 cities that are organised in roughly the same way. We have developed large partnerships with seven platform partners. The stuff they're pushing through this partnership in the cities is free though ultimately they will need to sell services to cities in order to have it be sustainable. But they've committed US\$240 million worth of goods and services into the cities. Whether cities can actually take that up or not is



Photo: Marie-Helene Carleton/Four Corners Media

the question. That's a long preface for saying partnerships are important. There is a partnership with Microsoft which is providing cyber-security consulting to cities. They did two workshops over the last six months in Rotterdam to help the port come to grips with what their cyber-security threat might be and how they can mitigate that risk. Veolia, the French infrastructure giant, provides consulting around water operations, water management, transportation and waste. A third partnership is with Sandia National Laboratories who have inter-disciplinary engineers and scientists thinking about the costs of climate change and helping Norfolk, Virginia, prioritise which interventions would be most cost-effective.

The next group of cities selected to join 100RC will bring the total to 100. Will you then stop adding cities to 100RC?

Never say never! But right now we're on the final round and we're going to stop at a hundred. We closed the final application in November and we have 340 applications for 33 spots. We're in the process of reviewing those applications and looking to make the announcement in late April or early May.

Can you talk more about the criteria you apply for judging which cities can join 100RC. Do cities understand why they have not been selected?

No, I think they probably can't see or understand why they haven't been selected! Three criteria that seem to be recipes for success are strong, innovative mayors, a good understanding of the interconnectedness of challenges and a good understanding of the interconnectedness and importance of broad stakeholders. We're working with 100 cities, which is too many in some ways, but what we're trying to do is change the way that the 10,000 or so cities there are in the world understand their risks and opportunities and to revolutionise governance in cities. What we're trying to do is get a 100-city cohort that creates compelling best practice examples, compelling champions who go out and teach the partners how they can better interact with the 9,900 cities not in the network.

What is the funding process for cities that do join the group?

We pay for a Chief Resilience Officer (CRO) for at least two years. We help a city develop a resilience strategy so we might pay for a consultant, who we call a strategy partner, to help cities go in, such as the consulting firm Arup. We put cities together in this peer-to-peer network and give them access to this platform of services but we don't pay for those services. What that funding is used for is direct funding in support of the CRO and indirect funding in terms of supporting the strategy. We put on a CRO Summit in Mexico City to which 55 CROs came.

Of course Rotterdam is different from Bangkok but they have enough consistency and similarity that they can begin to share experiences in a practical way

But isn't the pitfall for something like the Mexico City summit that you are adding networks for the sake of it rather than creating efficient network sharing?

One thing about 100RC that is different from a lot of the other city networks is we understand cities need to go through a similar process in order to be able to better share information. We may be a little too prescriptive on the process that cities have to go through and what the job description of the CRO is. There are lots of places for cities to customise that and make it right for their own local circumstances but there are lots of things that we insist on. That insistence makes it harder between us and the city at times but it makes the network really pop because people come in with similar experiences. Of course Rotterdam is different from Bangkok but they have enough consistency and similarity that they can begin to share experiences in a practical way. That is totally different to

a network that just lets cities come with their own perspectives.

Can cities that don't get selected to be a Resilient City still benefit from the resources and content that you're developing?

The answer is right now no. They don't benefit, almost at all, because we haven't been externally facing that way. We've been thinking about how do we engage with, learn from and teach the hundred that are in the network. We've done that for reasons of capacity and to make the network special. In 2016 that perspective will change and we will be much more open and outwardly facing. We will have better 'do it yourself' guidance.

What is the update on 100RC's regional office expansion?

We opened a London office in Clerkenwell Green and we have established a presence in Singapore as well. We'll officially launch that in 2016 and that will cover Asia and Oceania. The Americas region is actually in some ways the biggest, most challenging—sixteen of our cities are in the US and Canada and we'll probably pick more here and in Latin America. But you can hire better talent and take advantage of time zone issues if you have offices around the world. What we're trying to do is to globalise our physical footprint and our skills, language and approach so we can better partner with cities.

You have held many prominent positions all connected to emergency management? Where does your fascination with that issue arise from?

I majored in political science in college and went to Washington DC looking for a job in politics. I ended up writing for a trade publication called *Emergency Preparedness News* and got to understand that emergency management was applied political science. It was how organisations fit together in the crucible of a crisis. I think my core skill is in understanding how different organisations fit together and what that means. It's taken me to interesting places. This job is the best job in urban. I'm lucky and privileged to have it. ■



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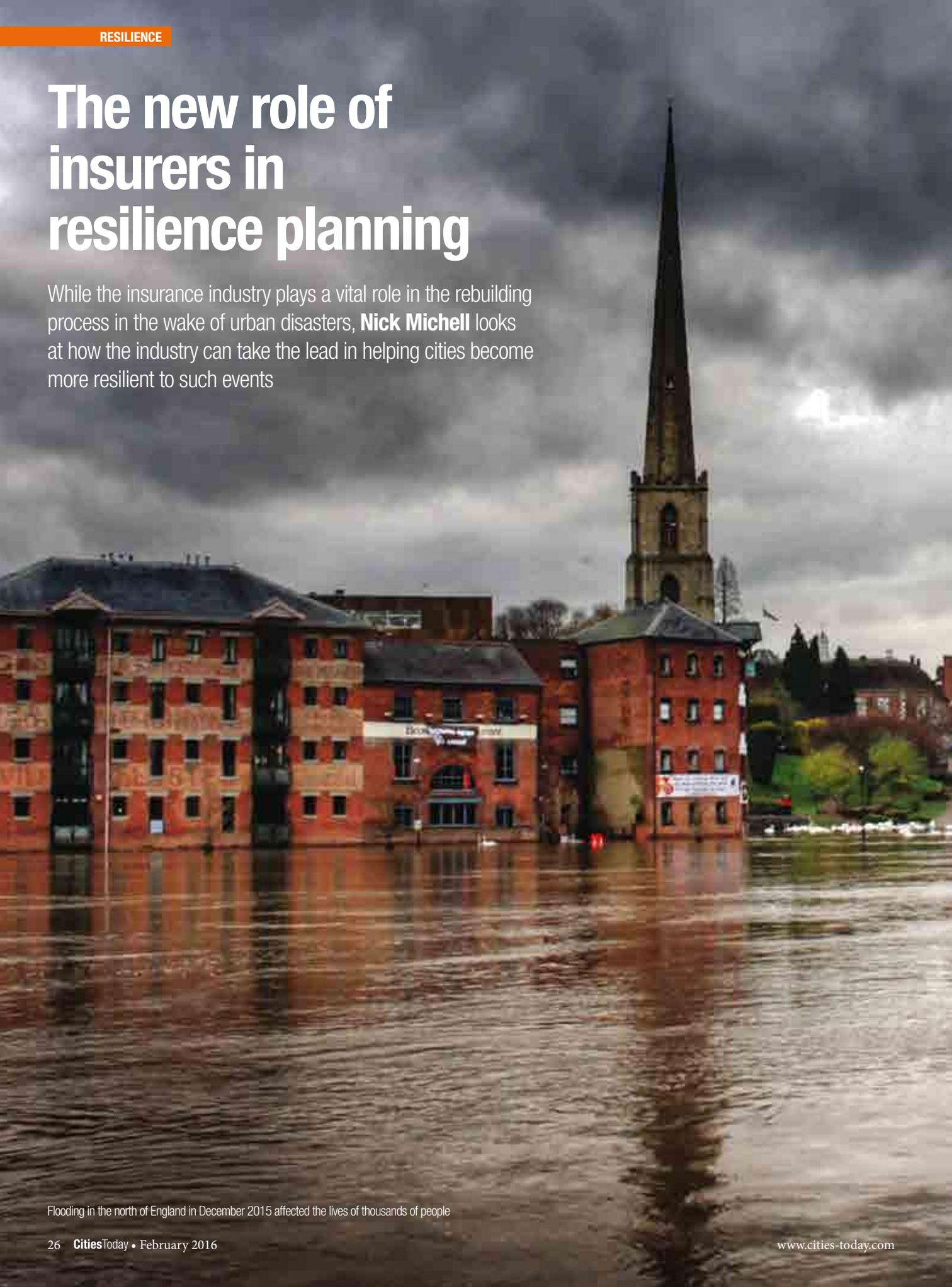
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The new role of insurers in resilience planning

While the insurance industry plays a vital role in the rebuilding process in the wake of urban disasters, **Nick Michell** looks at how the industry can take the lead in helping cities become more resilient to such events



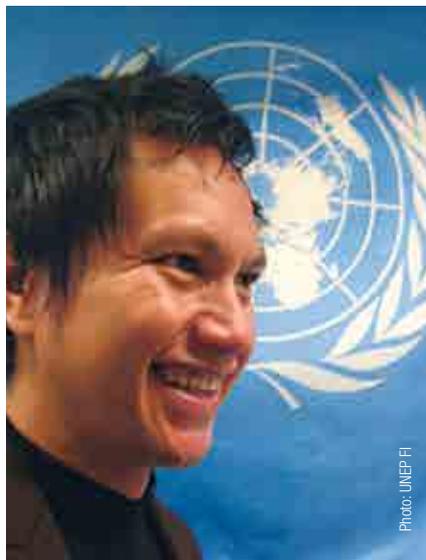
Flooding in the north of England in December 2015 affected the lives of thousands of people



Photo: mufin

While some were enjoying snowball fights in New York's Times Square in late January, others were counting the cost of the damage caused to their properties and businesses from one of the heaviest snowstorms ever to hit the east coast of the United States. On the weekend of 23-24 January 2016, Winter Storm Jonas forced road closures, led to a shutdown of public transport and the temporary closure of businesses, schools and government offices, and left at least 42 dead across 12 states.

The US blizzard was one of a series of severe weather impacts in the last two months as El Niño provoked flooding and storm damage across Argentina, Paraguay



Butch Bacani, Programme Leader, UNEP FI Principles for Sustainable Insurance Initiative

“Linking risk reduction efforts to premiums and insurance coverage is critical to changing behaviour and promoting good risk management”

*Butch Bacani, Programme Leader,
UNEP FI Principles for
Sustainable Insurance Initiative*

and Uruguay and in December, parts of northern England lay under water as flooding hit houses and businesses across the UK's Cumbrian and Yorkshire regions.

In the aftermath of an extreme weather event, one of the first ports of call for an individual, family or business will be an insurance company. Although the insurance industry plays a major role in paying out for losses to help communities cope with the financial hardship associated with those losses, what is often overlooked is its ability to assist cities with climate change adaptation and mitigation, and disaster risk reduction.

“The insurance industry is usually viewed from the narrow perspective of financial risk transfer only,” says Butch Bacani, Programme Leader for the UNEP Finance Initiative's (UNEP FIP) Principles for Sustainable Insurance, a global framework for the insurance industry to address environmental, social and governance risks and opportunities. “However as underwriters, insurers can help reduce risk by promoting good physical risk management for example, through proper land-use planning or resilient construction, before carrying financial risk. Linking risk reduction efforts to premiums and insurance coverage is critical to changing behaviour and promoting good risk management.”

Insurers can help communities understand, prevent and reduce risk through research and analytics, catastrophe risk models, and loss prevention. Insurers can also support zoning and building codes, and promote disaster preparedness. As risk carriers, insurers protect households and businesses by absorbing financial shocks due to cyclones, floods, droughts and earthquakes, while insurance pricing also provides risk signals and can reward risk reduction efforts.

“Protecting people before and after major floods, storms, and extreme events is a core part of our business,” says Karsten Loeffler, Managing Director of Allianz Climate Solutions, responsible for climate-related strategy development for the Allianz Group. “However, Allianz not only provides insurance solutions to help increase flood preparedness, but

also aims to create awareness amongst the general public on flood risks and mitigating these risks in the most vulnerable areas.”

The benefits of increased engagement

Cities are increasingly looking for more engagement from the insurance industry in relation to climate change adaptation and resilience because of its expertise in risk modelling and prevention, crisis management and helping get people and businesses back on their feet. There is also a growing understanding that effective insurance mechanisms are more cost-effective solutions than post-disaster aid or recovery alone.

Cities are perfectly placed to map the risks that are likely to materialise locally as well as to design adaptation strategies to curtail their exposure to the changing climate and insurance companies are looking to play a more active role as they adapt their own business models.



Karsten Loeffler, Managing Director of Allianz Climate Solutions

AXA Group, an insurance and asset management multinational, in collaboration with the United Nations Environment Programme's Finance Initiative released a study in October 2015, highlighting how the insurance industry can play a key role in advising cities on how to assess climate risks and supporting them in the development of resilience plans.

The report, entitled *BUSINESS UNUSUAL: Why is the climate changing the rules for our cities and SMEs*, involved 1,100 small and medium-sized enterprise directors and urban leaders from major cities in 18 countries across Europe, the Americas and Asia.

“Urban leaders and SMEs are increasingly realising how they are impacted by climate risk,” explains Christian Thimann, Group Head of Strategy, Sustainability & Public Affairs at AXA Group. “They have also witnessed the rising intensity and frequency of climate-related events and understand more and more that insurers have something worthwhile to say and contribute.”

The research showed that 62 percent of SMEs believe that insurance companies are a credible source of information on climate change, while urban leaders also recognise the power of the insurance industry to drive change, and the importance of having a dialogue with insurers to better understand the evolving nature of the risks they face.

“This report could not have come at a better time,” says Bacani of the UNEP Finance Initiative. “Our vision is a risk-aware world, where the insurance industry is trusted and plays its full role in enabling a healthy, safe, resilient and sustainable society. Risk management and collaboration are at the heart of sustainable development.”

New models for collaboration

The UNEP Finance Initiative’s Principles for Sustainable Insurance serve as a global framework for the insurance industry to address environmental, social and governance risks and opportunities. Developed by UNEP after the 2012 United Nations Conference on Sustainable Development, the Principles have led to the largest collaborative initiative between the United Nations and the insurance industry bringing together around 90 companies representing approximately 20 percent of world premium volume and US\$14 trillion in assets under management.

“Efforts by insurers to reduce risk and build resilience could be



Christian Thimann, Group Head of Strategy, Sustainability & Public Affairs, AXA Group

strengthened even further if there is greater collaboration and alignment with the efforts of governments, businesses and civil society in relevant areas such as land-use planning, building codes, and disaster preparedness,” says Bacani. “Greater awareness of climate change and its impacts, and the increasing frequency, severity and scale of extreme weather events and natural disasters, is

“It is very important that we share the vision of the insurance industry becoming a decisive partner in the global effort to develop resilience to climate change”

*Christian Thimann,
Group Head of Strategy,
Sustainability & Public Affairs,
AXA Group*

leading to greater collaboration between the insurance industry, governments, businesses, NGOs and academia.”

A good example is the collaboration announced the day Storm Jonas hit the US. On January 22, at the World Economic Forum in Davos, water and energy company Veolia, and global insurer Swiss Re Corporate Solutions, revealed that they had joined forces on an innovative infrastructure recovery initiative to speed up economic



On the weekend of the 23-24 January 2016, one of the heaviest snowstorms ever hit the east coast of the United States



Photo: Akbar Sajo, Dreamstime.com

Resilience planning means not only taking account of the shocks from flooding but also being prepared for the stresses of chronic food and water shortages or the economic effects of unemployment

recovery in cities in the aftermath of catastrophic events.

Under the partnership agreement brokered by the 100 Resilient Cities network, Swiss Re and Veolia will work with cities to understand the risk exposure of critical assets under current and future climate scenarios. Based on these assessments, cities can develop resilience plans to reduce the risk of these assets being affected and lower their risk exposure over time.

By planning ahead for major shocks and stresses, cities not only strengthen the resistance of their vital infrastructure; they can also limit economic interruption and begin to quickly repair damage without waiting for insurance assessments or payouts.

“This partnership is a sign that the private sector better understands what cities need to build resilience, and cities will no longer have to make difficult and often inefficient decisions after experiencing a disaster. They will know what is at risk, how it needs to improve, who will fix it, and where the funds will come from, all which allows them to

rebound more quickly,” says Michael Berkowitz, President of 100 Resilient Cities (for a full interview see page 22).

The insurance industry has the opportunity to initiate behavioural change among leaders and businesses at the local level through education and awareness, as well as through the pricing

businesses and the insurance industry to drive resilience strategies.

“We are still in the reasonably early stages when it comes to the contribution of the insurance industry to increased resilience to climate risk, but the potential is obvious,” says AXA’s Thimann. “It is very important that we share the vision

By planning ahead for major shocks and stresses, cities not only strengthen the resistance of their vital infrastructure; they can also limit economic interruption and begin to quickly repair damage without waiting for insurance assessments or payouts

and design of products and services that help incentivise resilience measures. At the individual customer level, there are many examples of resilience already being priced into premiums, such as flood-proofing measures for homes. Further dialogue should be initiated between cities,

of the insurance industry becoming a decisive partner in the global effort to develop resilience to climate change. It is not just about raising awareness among city leaders and businesses, but also about driving the insurance industry itself towards this vision.” ■



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The agreement is seen as a big step forward as nations are now ready to commit

City leaders demand more financial support on climate change

With 185 countries having submitted Intended Nationally Determined Contributions, and 195 countries adopting the Paris Agreement from COP21, **Jonathan Andrews** asked a select panel what the agreement means for cities

What are your thoughts on the COP21 agreement?



Michael Bloomberg,
UN Secretary-
General's Special
Envoy for Cities and
Climate Change

The global climate agreement reached

in Paris was a big step forward. The agreement shows that nations are ready and willing to cooperate in the battle against climate change. Together with the commitments made by cities and businesses, the Paris agreement

also sends a clear signal to the world's financial markets, which will help spur greater private sector investment in low-carbon technology and infrastructure.

That said, COP21 was a mid-term, not a final exam. While the agreement creates a framework for how the world can meet the challenge of climate change, the hard work is still ahead.



Mark Watts,
Executive Director,
C40 Cities Climate
Leadership Group

The agreement is a major breakthrough.

It is incredible to gain the consensus of so many countries on anything, but to gain such a positive agreement on climate change was immense. The aspiration to limit temperature rise to 1.5 degrees Celsius was particularly welcome. But of course the independent national commitments come nowhere near to what is needed to achieve that target, and the enforcement mechanisms of the agreement itself are weak and don't come into force until 2020. That is why the role of cities and other non-state actors is so significant. Mayors in power now are critical to getting the world onto a low carbon pathway. Fortunately, cities are

ramping up action already, we reported 10,000 individual climate actions taken by C40 cities since the Copenhagen climate talks in 2009, demonstrating the speed with which cities are moving.



Tom Cochran, CEO and Executive Director, US Conference of Mayors

America's mayors have been advocating

for an agreement like this one for the last several years. In 2005, when the Kyoto Protocol went into effect for 141 nations and the US wasn't one of them, we gathered 141 US cities to agree to similar targets in the US Mayors Climate Protection Agreement. Since then, we've had over 1,000 mayors sign in the US, and our agreement has been the model for others like it around the world.

When we went to Copenhagen for COP 15 in 2009, we were discouraged that local leaders were doing so much more on climate change than national leaders. So it was heartening to see our national leaders finally match the actions of mayors around the world.



Anna Lisa Boni, Secretary General, EUROCITIES

It is a positive step, paving the way for a low-carbon future.

I am very pleased to see local and subnational actors explicitly recognised as part of the agreement. And I welcome the proposal to revisit our progress every five years to ensure we are all on track. But this is just the start: we have an agreement, and now everyone must act on it and follow up seriously on their commitments.



Monika Zimmermann, Deputy Secretary General, ICLEI

This concludes efforts since 2007 to build a

new climate regime, showing that all countries acknowledge the threat of

global warming and are committed to climate action. The inclusive nature of the agreement that refers to Non-Party Stakeholders is also a very positive sign in that it particularly engages local and subnational governments in advancing climate goals. By affirming engagement with all levels of government, the agreement strengthens the global coalition that has resolved to build a climate-safe and resilient future.



Jean-Pierre Elong Mbassi, Secretary General, UCLG Africa

For the first time all nation-states accepted that they face a common

threat from global warming, and agreed that every effort should be made to maintain global warming below 2 degrees Celsius. However, the fact that the agreement does not have binding provisions can be seen as a weakness. The 'name and shame' principle in the agreement supposes that proper monitoring and evaluation mechanisms are in place that can deliver neutral advice. Reliance on evaluation by experts of voluntary country reports will certainly not be enough to know exactly which countries are enforcing the agreement. The 'name and shame' principle further supposes that civil society would play a greater role. It is striking that despite the critical role expected from them, civil society organisations were not really party to the COP21 talks



Rafael Tuts, Coordinator, Urban Planning and Design Branch, UN-Habitat

The Paris Agreement is very pragmatic

and provides a sound framework for long-term climate stabilisation. It is very different from any other multilateral environmental agreement because it allows for incrementally increasing ambition and builds on nationally determined contributions to reach a global target.

In what areas could the agreement do more?

Bloomberg

The commitments nations made to reduce carbon emissions still aren't enough to prevent some of the worst impacts of climate change. However, the agreement includes regular re-evaluations of national goals and transparent reporting of progress, a feature that city leaders strongly advocated. Those two features will make it possible to address areas where more needs to be done and continue raising the bar as technology improves.

Watts

I would have liked to have seen even more in the agreement about how nation states will support and enable city governments. Historically, almost none of the many international green funds have been allowed to provide finance directly to cities. In Paris we launched the C40 City Finance Facility with backing from the German government and the Inter-American Development Bank, to help overcome this obstacle. Our calculation is that just US\$20 million of grant funding to cities could unlock US\$1 billion of low-carbon infrastructure investment in cities.

Cochran

As with the Kyoto Protocol, it will be difficult for the executive branch to get approval of this agreement from Congress. When the US president was first inaugurated in 2009, *An Inconvenient Truth* [the documentary by former Vice-President, Al Gore] was still on everyone's mind, and there was some hope that Congress would finally act on climate change and commit to substantive emissions reductions. But that's no longer the case. Now it's hard to get a lot of people in the US to even admit that climate change is real and that it's human-made. So it could be very difficult for this agreement to get through Congress.

Boni

While national governments have committed to actions to keep global warming under 1.5 degrees Celsius, there is no legal obligation for them to meet



Photo: ICLEI e.v. 2015

At ICLEI's Transformative Actions Program (TAP) pavilion over 80 local and subnational climate action projects were presented

these commitments, and at present we are still on course for a far higher rise in temperature. And it is also important to stress that we need to take action now, even though the agreement only sets out commitments from 2020.

Zimmermann

Unlike Agenda 21 in Rio in 1992 or the Kyoto Protocol in 1997, the Paris Agreement was agreed and adopted but national governments have not signed it yet. Therefore, the first milestone is the number and diversity of Parties / Heads of States to sign the Paris Agreement on 22 April 2016, wisely scheduled to coincide with Earth Day celebrations. The second milestone is the institutional framework and its governance. In particular, this refers to coordination of the technical examination processes, Lima-Paris Action Agenda Outcomes, as well as the performance of the Champions that will be appointed by the COP Presidencies, who will be expected to facilitate the acceleration of climate action and the raising of climate ambition, particularly in the pre-2020 period. This also includes the role and mission of the new leaders—the UN Secretary General, UNEP Executive Director

and UNFCCC Executive Secretary—who will all be replaced in 2016.

Mbassi

This is the kind of issue where a multi-stakeholder approach is key. An organised and structured quadripartite dialogue between national governments, local authorities, the private sector and civil society at all levels (subnational, national, regional and global) would have been the best way to prepare the negotiations at COP21. We are hopeful that this approach will be adopted for the COP22 in Marrakesh in November 2016, which focuses specifically on the means of implementation of the COP21 Agreement.

By signing the Paris Declaration at the Climate Summit for Local Leaders held alongside COP21, more than 600 cities will set targets to cut urban emissions in half. Was this the COP where cities became not just a side event but took the limelight away from nation-states?

Bloomberg

COP21 was the first time nations recognised cities as full partners in the effort to confront climate change, and that is a big reason why

the summit was successful. National leaders were able to reach an ambitious agreement because they could see how much progress cities are making and how eager they are to do more.

Watts

The Climate Summit for Local Leaders, hosted at Paris City Hall by Anne Hidalgo, Mayor of Paris and Michael Bloomberg, UN Secretary General's Special Envoy for Cities and Climate Change, was one of the most inspiring events I have participated in. Mayors spoke with eloquence and knowledge about climate issues, joking about 'stealing' each other's ideas and being in healthy competition to be the greenest. There is no doubt that city leaders have a major role to play in defining what the road from Paris looks like.

Mbassi

Unfortunately, despite their unavoidable role in the climate change agenda, and the general recognition that no real progress would be made in curbing global warming if cities and local governments were not considered on

“COP21 was the first time nations recognised cities as full partners in the effort to confront climate change, and that is a big reason why the summit was successful”

*Michael Bloomberg,
UN Secretary-General's Special
Envoy for Cities and Climate
Change*

the frontline of this battle, local leaders continue to voice their case outside the negotiating rooms. The Climate Summit for Local Leaders was considered as a side event and was not part of the official proceedings of COP21. So there is still

a long way to go before the UN can translate into practice the first sentence of its Founding Declaration: “We the people of the world...”

Tuts

It is striking to see how the visibility of the topic of ‘cities and climate change’ has increased between Copenhagen and Paris. Six years ago, we were struggling to make the voice of cities heard in climate change forums. At COP21 there was unprecedented room to debate the potential of cities and sustainable urbanisation to cut emissions and build climate resilience. More than 90 side events focused on urban and subnational action. The grand summit at the Paris City Hall generated much media attention, but nation-states remain firmly in control in setting the legislative framework to stimulate climate change action.

There still remains a gap between implementing mitigation and adaptation actions especially in developing cities. Does more action need to be taken on adaptation?

Watts

Yes, and that is very much what our city members are telling us. In order to take effective action on adaptation, cities need to first understand the climate risks they face and the adaptation options available to them. With support from Bloomberg Philanthropies, C40 and Arup are developing *The Climate Risk and Adaptation Framework and Taxonomy (CRAFT) Framework* as a critical component of the Compact of Mayors. CRAFT establishes a clear and concise lexicon of the climate hazards that cities face today, and documents how those hazards may change in the future, creating a common language for cities to discuss climate change adaptation.

Boni

While we are doing our best to limit climate change, we still need to act now to make our territories more resilient to its inevitable impacts. Our cities are particularly vulnerable, as centres of dense population and infrastructure, so it is essential to prepare now. Initiatives

“Whoever the next President of the United States is, that person needs to prioritise financing a green infrastructure for America’s cities and metro areas”

Tom Cochran,

CEO and Executive Director, US Conference of Mayors

such as the New Integrated Covenant of Mayors on Climate and Energy, which addresses both mitigation and adaptation and has recently been extended to cover local authorities around the world—not just in Europe—are valuable tools for supporting and accelerating cities’ efforts in this field.

Zimmermann

ICLEI advocates that US\$35 billion per year be dedicated to adaptation needs in communities across the world via grant-based provisions for developing countries. In addition to public grants and loans, we encourage local governments to focus on providing frameworks for private investments, including these of citizens and small local business. No responsible city development can be done today without checking each investment against adaptation needs.

Tuts

More needs to be done on adaptation. This will be easier as climate impacts are now becoming more visible with every passing day. The Green Climate Fund aims for a 50:50 distribution of funds to address mitigation and adaptation, which will no doubt redress the current unbalanced funding pattern.

The COP21 agreement outlines that, globally, US\$100 billion a year needs to be spent to pursue the targets with most of the costs being associated with greening infrastructure and mitigation and adaptation efforts in urban areas. Is finance the next battle for cities and where will the funds come from?

Bloomberg

It’s an important issue but remember the private sector has a strong interest

in helping cities avoid the impacts of climate change because cities are where most of the world’s businesses are located. The risks cities face threaten those businesses as well. The private sector also has a strong profit incentive to get involved. The key is for governments to remove barriers that stop cities from accessing capital markets (many cities, for instance, lack bond ratings) and that stop businesses from making investments.

Watts

If cities, particularly those in the Global South, are to continue leading the way on climate action they have to be supported with the proper financing. C40 has identified 2,300 high-impact, readily deliverable actions that could save a massive 450 MtCO₂ by 2020, equivalent to the annual emissions of the United Kingdom, and could be unlocked with just US\$6.8 billion.

Cochran

Whoever the next President of the United States is, that person needs to prioritise financing a green infrastructure for America’s cities and metro areas. In Iowa, we released our *2016 Mayors Compact for a Better America*, which is a 16-point call to action for the presidential candidates based on the idea of ‘invest and protect’. In that Compact, we call on the next president to expand clean energy use to grow the economy and protect the climate and environment, as well as urbanise the Department of Energy.

Zimmermann

ICLEI and partners aim to support cities in the realm of climate finance through the Transformative Actions Program (TAP), a multiyear initiative

that contributes to the development of new financing mechanisms and helps eliminate hurdles in access to climate finance. The already high level of participation in the first year of the TAP shows that cities have ambitious projects that are ready to be implemented and scaled up. Direct loans from funding agencies have proven to be effective in some cases, while local bonds, green bonds and new forms of public-private partnerships will help cities to pursue their sustainability initiatives.

Mbassi

There is a lot of hope in this 'climate justice fund' of US\$100 billion a year, however, past experience with climate finance shows that there is a huge difference between pledges and effective money in the cashbox. Also, accessing climate finance has been very difficult for local authorities because of discriminatory and complicated procedures. Local authorities hope that there will be a window for their direct access to this fund. We should take advantage of the period of time that separates us from the entry in force of the fund in 2020 to define appropriate mechanisms that would ensure effective access and use of this fund for mitigation and adaptation initiatives at local and regional levels.

Tuts

Assuming all the pledges are turning into cash, the US\$100 billion is a good start, but the needs are much greater. Cities will need to use a wide array of public and private instruments to finance climate action. Much of the resources will have to come from private sector investment in renewables and in climate resilient infrastructure. Currently there are many bottlenecks that prevent cities from accessing climate finance, such as restrictions to multilateral loans, the difficulty of bundling climate actions within and across cities, the complexity of procedures and the serious capacity gaps at the local government level, particularly in intermediate cities in developing countries. The work of the City Climate Finance Leadership Alliance is aimed at removing some of these bottlenecks.

According to C40 nearly three-quarters of challenges cities face when trying to take effective action on climate change require collaboration with national governments, the private sector and others. What can be done to develop and improve these relationships?

Bloomberg

It's only natural that challenges will arise but the more that cities work together and share best practices—and as national governments increasingly accept cities as partners on climate change—the more success cities will find.

Transparency is also important to cooperation, so all sides can see what the others are doing. The more transparent cities are, the more national governments will follow their lead. And the better data we have about climate risks—and climate progress—the more opportunities there will be for cities, businesses, and national governments to work together. That's why I'm part of a group called Risky Business, which is working to help

global Clean Bus Summit in June 2015, bus manufacturers were keen to attend the event and support cities in delivering fleets of new low-emission buses, not least because of the collective purchasing power of the 24 plus cities in attendance. Mayor Boris Johnson told the C40 Forum that London was already benefiting from a 10 percent reduction in the price of hybrid electric buses.

Cochran

We have a good relationship with the private sector on the issue of climate change. Our partners in the private sector recognise that if they are going to be successful in our cities, then we all need to adapt together. Walmart has sponsored our Mayors Climate Protection Awards for ten years now, and we're incredibly proud of that partnership, which not only highlights local action but also helps to fund it. We were also grateful that Philips and Comcast NBCUniversal contributed to our efforts in Paris, sponsoring the event we held at Ambassador Hartley's residence.

“National regulatory and taxation frameworks can support cities by removing harmful subsidies, such as for fossil fuels, and providing incentives for renewables, energy efficiency in buildings and urban transport”

Anna Lisa Boni, Secretary General, EUROCITIES

industries better understand the climate risks they face. I'm also part of a new Task Force on Climate-Related Financial Disclosures, which will help businesses measure and report the risks they face in a standardised way.

Watts

Because we understand the challenges, C40 can continue to support mayors and cities to collaborate, share the ideas that work and learn from those that don't. For example, in May 2015 city members of the C40 Low Emission Vehicles Network collectively forged an international Declaration on Clean Buses. By the time London hosted the first ever

With the federal government, the biggest challenge we still have to overcome is getting people to acknowledge that climate change is real and man-made. We're lucky that this administration does try on climate, but there are people in both houses of Congress and several candidates for president who say publicly that climate change is a hoax. That makes it difficult to pursue an aggressive federal partnership on climate.

Boni

National regulatory and taxation frameworks can support cities by removing harmful subsidies, such as for fossil fuels, and providing incentives for

renewables, energy efficiency in buildings and urban transport. Legislators at national or, in our case, the EU level, can put into place supportive regulation as well. It is important to recognise that these relationships are mutually beneficial.

Working with the private sector is a useful way of accelerating action and ensuring that solutions fit the needs on the ground. The European public-private partnership on energy efficient buildings is a good example of this kind of cooperation, helping to develop affordable breakthrough technologies and solutions at building and district scale, facilitating the road towards future smart cities.

Mbassi

Working with civil society and the private sector forms part of the DNA of local authorities. What needs to be done is to create an enabling environment at the national and upper levels of public governance to allow more such multi-stakeholder engagements. What is also needed is an internationally

agreed mechanism of surveillance to avoid abuse of dominant situations, particularly by multinational companies, whose bargaining powers can be far stronger than some of the nation-states of the developing world, not to mention their local and regional governments.

Looking ahead what are your next steps to help cities put action in place to keep global warming capped at 1.5 degrees?

Bloomberg

The more national governments empower cities to act, the more they will. Some cities need greater flexibility to manage their infrastructure, particularly energy and transport. Some need greater access to global credit markets. Others need greater freedom from regulations. And cities around the world need energy subsidies to be redirected away from coal and other dirty burning sources to clean energy and modern infrastructure. The best way to encourage national governments to take these steps is for

cities to continue working together, acting boldly, and leading by example.

Watts

A particular priority for C40 will be to seek new investors for the Cities Finance Facility to deliver even more funding for green infrastructure. No mayor or civic leader should be forced to abandon a viable green project, because of a shortage of expertise to help them secure the funding needed to make the project succeed.

Cochran

Between them, the 1,400 cities of the United States have the innovative spirit and ideas to address these problems. Through the US Conference of Mayors Climate Protection Center, the largest mayoral climate centre in the world, we'll keep providing them with venues to share best practices with each other. These include our Energy Independence and Climate Protection Task Force, our Mayors Climate Protection Awards, and the surveys we issue from time to time. We'll also keep up our

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efforts at the federal level to get mayors the resources they need to cap global warming at 1.5 degrees Celsius.

Boni

At EUROCITIES, we will continue advocating for a supportive EU legislative framework and funding for cities, and we will keep on exchanging good city practices on climate mitigation and adaptation. Many cities have set themselves ambitious targets—often more ambitious than their national governments—such as Ghent's [Belgium] aim to become climate neutral by 2050, and Malmö's [Sweden] goal of ensuring that 30 percent of all journeys in the city are made by bike by 2030. But while ambition is high, cities need resources to make these happen. European and international funding sources must be made easily available for cities, and national frameworks must allow cities the flexibility to design the policies that work for their citizens.

Zimmermann

We need a three-part strategy. First, we need to raise ambition and accelerate trendsetting actions in all parts of the world. For the first, mobilising commitments and demonstrating compliance with the Compact of Mayors will be instrumental. The latter could be built on the success of the first phase of the Transformative Actions Program (TAP). In 2015, the TAP received 125 submissions from 88 cities in 42 countries, demonstrating that cities are ready to act now. The second part focuses on mainstreaming. We need national frameworks for all cities in each country that give priority and benefits to climate compatible planning and decisions. Third, we need to further shape the global climate regime to encourage and reward nations and their cities as they advance on mitigation and adaptation. The set of instruments has to be further sharpened to ensure that economic prosperity is based on climate friendliness and not on exploitative conditions.

Mbassi

Cities and regions of the developing world are conscious that they cannot replicate the unsustainable models of development followed by their counterparts from developed countries

that put the world at risk with global warming. It is therefore time for all of us to join hands and find a more sustainable and low-carbon way of development. The world has enough knowledge to come up with the most appropriate solution—provided the spirit of oneness shown at COP21 prevails. UCLG Africa will do its utmost bit for cities and regions at least in Africa if not in all regions of the world, to keep the COP21 momentum of cooperation alive, and to work towards more solidarity and less zero-sum fierce competition between them.

Tuts

There is a need to expand the scale and pace of what cities are already doing such as shifting transport modes, converting solid waste to energy and reducing heating and cooling needs. In addition, where allowed, cities could engage in renewable energy generation, to ensure energy security and deeper emission cuts. The upcoming Habitat III conference in Quito in October 2016 will provide an opportunity to further operationalise the Paris Agreement through the New Urban Agenda. ■

“Cities and regions of the developing world are conscious that they cannot replicate the unsustainable models of development followed by their counterparts from developed countries that put the world at risk with global warming”

Jean-Pierre Elong Mbassi, Secretary General, UCLG Africa



Ban Ki-moon, the UN Secretary General, addressed the Climate Summit for Local Leaders, which was hosted by Anne Hidalgo, Mayor of Paris and Michael Bloomberg, in Paris City Hall

Global agreements and the role of cities for a sustainable revival of Europe

By **Wolfgang Teubner**, Regional Director of ICLEI European Secretariat

In 2015, heads of state from around the world managed to come to two major agreements that, if taken seriously, may considerably change our way of life in the coming decades. In September, the General Assembly of the United Nations agreed on the Global Sustainable Development Goals (SDGs), a framework that sets out how we can sustain a high quality of life for all of Earth's inhabitants without destroying the global ecosystem.

These goals are broken down into 169 targets, including a specific goal for urban development, for which indicators are yet to be defined. Just two months ago in Paris almost the same heads of state reached a new global climate agreement, laying out the processes and regime that is meant to ensure that greenhouse gas emissions will be kept at a level that will keep global warming below 2 degrees Celsius.

Another striking element in these agreements is that they accept the idea of boundaries to the global ecosystem and even the conclusion that there are limits for using this ecosystem to safeguard quality of life. The most obvious example is the discussion about the degree to which global warming must be limited (less, equal or more than 2 degrees Celsius), which will be translated into a limit for greenhouse gas emissions.

The implicit acceptance of limits and boundaries leads to the question of access to and distribution of available resources, the benefits and costs of resource use, and the share of damages resulting from use (and indeed overuse). In many cases costs and benefits are separated geographically. This is partly a consequence of countries being at



Wolfgang Teubner, Regional Director of ICLEI European Secretariat

“It seems unavoidable that we must more seriously question some of the ruling paradigms in our current societies and reflect on the consequences of our lifestyles”

different development stages, and partly the result of the global trade regime—one that raises troubling issues in terms of global justice. Another challenge that is not openly addressed is that the implicit acceptance of limits cannot be properly introduced into a political and economic system that is functioning in a paradigm of permanent growth and expansion.

If we seriously look at the changes needed in our societies to meet the challenges in front of us, such as de-carbonising our energy systems

or increasing resource efficiency, it becomes obvious that we need a deeper transformation than just a faster application of new and innovative technology, a quick-fix solution being touted by some. It seems unavoidable that we must more seriously question some of the ruling paradigms in our current societies and reflect on the consequences of our lifestyles.

As Governor Jerry Brown of California said: “COP21 is not just about a treaty, it has to be about communities,

cities and regions—it has to be about change [...] we must reduce the carbon intensity of our life. It's not a matter of new technology but a change in behaviour. We [local and sub-national governments] need to apply pressure and inspire our nations.”

In the European Union, where almost 75 percent of the people are city dwellers, it seems obvious that cities will be the places where these transformations will have to happen. In fact, they are already starting to happen.

“National governments have to look to the cities to make the difference,” said George Ferguson, Mayor of European Green Capital 2015 Bristol and co-organiser of the Cities and Regions Pavilion at COP21. “We know what the issues are. We know what the solutions are. They need to free us up to be able to act.”

Of course, in a globalised world, many local developments are influenced by decisions and processes that are taken on a national and global level and that are driven by financial, economic and political dynamics and interests that are increasingly alien to people, and, in some cases, cause negative sentiments and anxiety. When we look at transformative actions in our cities, we therefore need to reflect the societal and political context beyond city boundaries.

Looking at Europe, since the start of the ongoing economic and financial crisis, considerable parts of the population have either experienced economic problems due to unemployment or reduced income, or are in fear that this might happen to them in the near future. It is undeniable that the social gap in Europe is widening. Even in phases of economic growth, the benefits are not reaching those that feel left behind and by far not enough decent jobs are being created. In 2015, the Greek crisis and much more so the refugee crisis have made it obvious that the European Union no longer has a common vision with nationalism on the rise. In light of this crisis and the obvious need for transformation, the simple political paradigm of growth and jobs might not be sufficient any longer.

Even though there are certainly no easy explanations, it could well be that inequality globally as well as within

countries and regions regarding the access to natural resources, the negative impacts of climate change, and the access to finance and economic opportunities are contributors to these issues. By tackling the sources, the SDGs and the emerging climate regime are addressing these problems.

Since these agreements are made by national governments, their implementation will largely depend on the policies developed by the individual states of the European Union which translate them into legislation, regulation, subsidies, incentives or taxes. However, it remains doubtful whether in the current situation there is enough common ground to move things quickly.

“In 2015 the Greek crisis and much more so the refugee crisis have made it obvious that the European Union no longer has a common vision with nationalism on the rise”

Therefore the role of cities and city leaders will become even more crucial. The international agreements can provide a compass and orientation for the further development and transformation of urban societies.

For example, the decarbonisation of the energy supply and the fast introduction of renewable energy can provide ample opportunities for decentralisation, cooperative models or other settings that will result in civic investment, allowing the local population to have control over their energy supply.

“The energy economy is changing rapidly and those of us left behind will be harmed economically [...]. Investing in mitigation and adaptation locally does not cost more, it actually saves money in the long term,” said Matt Appelbaum, Mayor of Boulder, Colorado.

In Paris, Committee of the Regions President Markku Markkula praised the

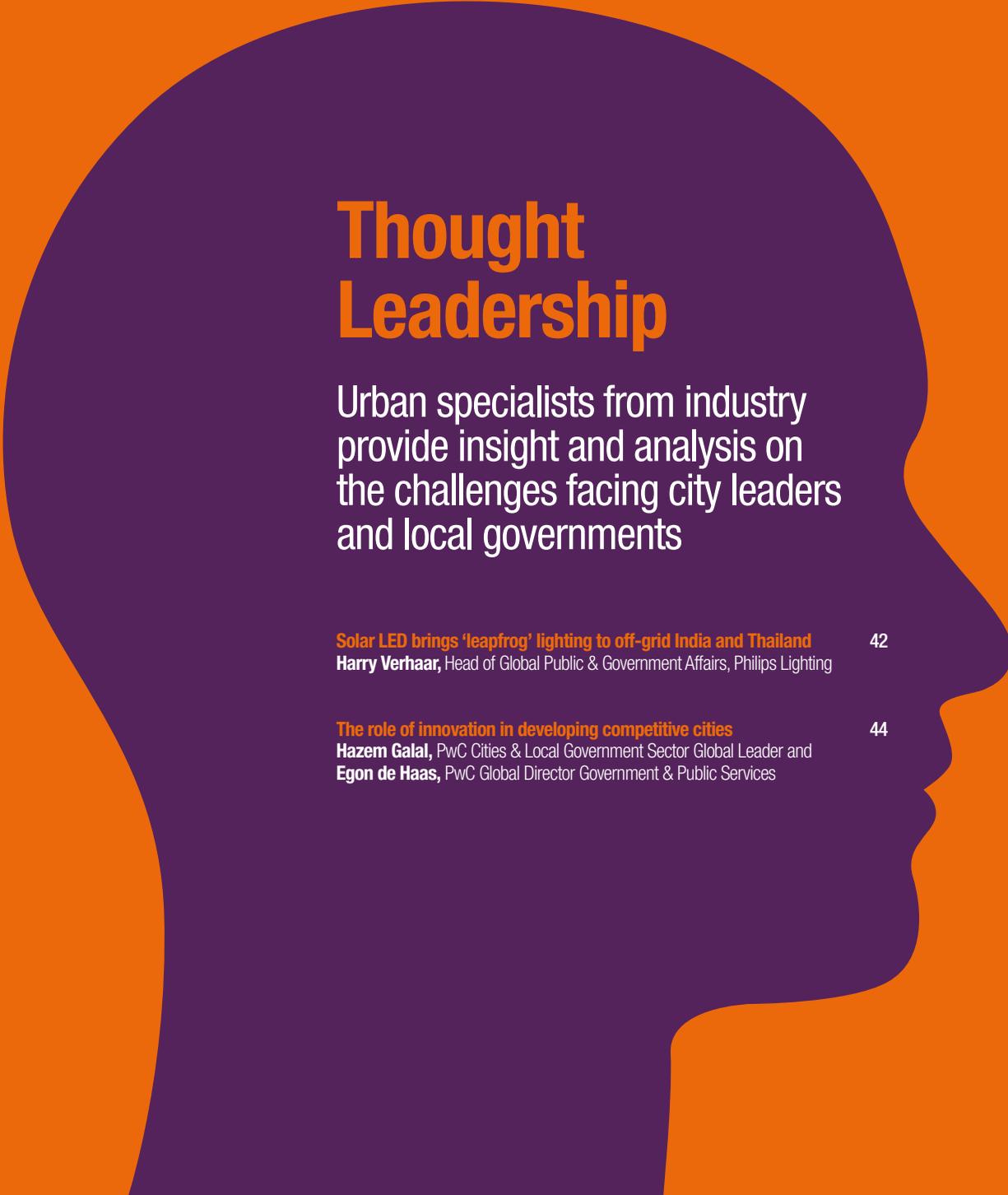
ingenuity of civic society: “At the local level we see some of the most innovative thinking. Cities and regions are changing the energy sector by moving to a decentralised model and away from fossil fuels. Cities and regions are the answer to the climate and energy challenge.”

Food production, food processing and distribution in combination with green and blue urban infrastructure, adaptation to climate change as well as urban rural cooperation provides for the same. Cities need to identify and support the creation of local value chains, investment opportunities and job creation. In many European cities we see a massive increase in social innovation and civic engagement, partly triggered by the replacement of public tasks by private engagement due to cuts in public spending and partly as an expression of civic society aiming to influence and shape urban society and urban space.

To meet global environmental challenges as well as social challenges, including the refugee crisis and migration, and to maintain the social and democratic inclusion in our European urban societies, we need to strengthen our civil societies. We might need to re-define the boundaries and responsibilities between public and private and the relationship between administrations and citizens. This will also require more citizens to come out of a passive complaint and protest mode to take on more responsibility and to get actively engaged as actors and investors that create and shape their urban environment.

An emerging Urban Agenda for the European Union should therefore not only align existing legislation, regulation and initiatives relating to cities and the urban environment but also align them with the goals and needs resulting from the new global agreements. Even more importantly it should count on bottom-up and decentralised initiatives, and ensure that civic engagement and social innovation are strengthened and supported and obstacles are moved out of the way.

Relating funding and financial support schemes should take this into account, and be further adapted to local needs and initiatives. ■



Thought Leadership

Urban specialists from industry provide insight and analysis on the challenges facing city leaders and local governments

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Solar LED brings ‘leapfrog’ lighting to off-grid India and Thailand

By **Harry Verhaar**, Head of Global Public & Government Affairs, Philips Lighting

As governments across the world look for ways to curb carbon emissions, improving energy efficiency is an urgent priority. For industrialised nations, renovation of existing infrastructure is crucial to save both energy and the environment. In developing regions, solar lighting has given us huge opportunities to ‘leapfrog’ outdated technology.

New projects in India and Thailand vividly demonstrate this potential. The Indian states of Uttar Pradesh and Manipur, for example, have begun installation of more than 76,000 solar LED street lamps in rural communities. Solar LED is less expensive, more environmentally friendly, and eliminates the noxious fumes from alternatives such as kerosene.

Today, almost 300 million Indians depend on wood fires or kerosene for their lighting. Worldwide, about 1.1 billion people—or one in seven—are trapped in light poverty, denied access to reliable electricity. Clean solar light is a simple, fast solution to this injustice.

Ending light poverty is part-and-parcel of the global drive to improve energy efficiency. A doubling in the rate of energy efficiency improvement worldwide to 3 percent per year—from the current annual rate of around 1.5 percent—would reduce the global bill for fossil fuels by more than US\$2 trillion by 2030.

Such dramatic improvements can be achieved simply by making better use of technology that is already available. The new installations in Uttar Pradesh will light more than 800 villages and small towns, following a tender process focused on new and renewable energy sources.

Philips, the global leader in lighting, won separate LED solar street lighting contracts with UPNEDA (Uttar Pradesh New and Renewable Energy Development



Ending light poverty is part-and-parcel of the global drive to improve energy efficiency

Agency) and MANIREDA (Manipur Renewable Energy Development Agency) to supply 12W, 1,200 lumen LED luminaires powered by IP66, high efficiency PWM (Pulse Width Modulation) chargers.

The street lamps built with integrated LED drivers and backed with a five-year manufacturer’s warranty, will deliver energy efficiency of more than 96 percent. The housings are designed for harsh conditions, notably extreme temperatures and exposure to water and dust.

The solar mission is a government-funded scheme, monitored by the Chief Minister of Uttar Pradesh. Under the

Prakash Path initiative, the government aims to unlock huge savings from the clean energy potential of LED lighting technology in areas where electricity is unavailable or erratic.

“Such model projects go a long way in raising awareness of the power of lighting technologies,” said Harsh Chitale, CEO of Philips Lighting, South Asia.

In Manipur, MANIREDA required installation of 1,400 f 43W solar street lighting systems spanning a variety of terrain, from main areas of the state capital to small towns and villages. Exposed conditions posed a logistical challenge for Philips.

The customised 43W, 3,500 lumen Solar LED Street Lighting System includes battery mountings on poles capable of withstanding strong winds on exposed hillsides, plus a state-of-the-art MPPT (Maximum Power Point Charging) controller for high-efficiency battery charging in variable weather.

For local planners, ease and speed of installation are often decisive factors in the choice of solar lamps. In southern Thailand, for example, Philips will complete installation of more than 17,000 advanced LED street lamps to light a graveyard and surrounding paths. Last year, 13,000 units were installed with the balance for delivery in 2016. The installation combines standard and customised BRP330 and BRP210 solar luminaires with an efficacy of 115lm/W.

For policy-makers, grasping the opportunities of energy-efficient lighting will often entail a simpler decision-making process in developing countries. Low maintenance requirements for solar LED are often complimented by the simplified administrative and political processes for stand-alone solutions. Where planners are creating infrastructure from scratch, solar LED is a zero-energy solution.

Such advantages make the prospect of an end to light poverty attainable, and demonstrate the policy choices that can drive a global shift to more energy-efficient lighting. In India alone, the government has calculated that converting to 100 percent LED lighting would reduce total power consumption by 20,000 MW—a saving that unlocks new resources needed to deliver on the promise of reliable power for every citizen.

The decision process behind these innovative lighting choices has highlighted the potential for solar installations to tackle global challenges in agriculture, education, health and public infrastructure. Adopting the best and cleanest technologies can create six million new jobs within five years and slash the average household energy bill by a third.

Lighting accounts for 19 percent of global electricity consumption, yet even the simplest of changes—a universal switch to LED lighting—would reduce this proportion to about 7 percent, curbing global CO₂ emissions by about 1,400 megatons by 2030.

A switch to LED lighting is a necessary first step in the sequence of energy-efficient innovation. LED consumes at least 40 percent less energy than conventional lighting. The potential savings from connected lighting—where intelligent LEDs, embedded with sensors and connected wirelessly, can be managed remotely via the Internet—can reach 80 percent.

Two years ago, Los Angeles began installing 140,000 LED street lights. In 2015, the city reported an energy saving of 63 percent and a cost reduction of almost US\$9 million. The city offers a compelling model for other urban conurbations. Of approximately 300 million streetlights worldwide, only about 10 percent are LEDs. And just 1 percent is connected.

We are living at a critical juncture for the future of our planet. Last December's global agreement at the COP21 climate summit in Paris is an unprecedented commitment to pre-empt a catastrophic rise in global temperatures. We know that unless we can change fundamentally the way we use the world's resources, the consequences of business as usual will be catastrophic.

In Manipur, MANIREDA required installation of 1,400 f 43W solar street lighting systems spanning a variety of terrain, from main areas of the state capital to small towns and villages. Exposed conditions posed a logistical challenge for Philips



Photo: Philips Lighting

Uttar Pradesh and Manipur have begun installation of more than 76,000 solar LED street lamps in rural communities

Failing to take advantage of this technology would be a missed opportunity. The collective pledges by 185 nations to cut greenhouse gas emissions mark an historic breakthrough. For the first time there is a shared commitment to limit global warming to less than two degrees Celcius, with a stated target of 1.5 degrees Celsius. This is a pivotal moment, an opportunity to do business differently.

By setting emissions targets, country by country, COP21 achieved more than previous attempts to negotiate a framework for cooperation from the top-down. Even so, the sum of these individual national pledges is not yet sufficient to achieve our shared goal. The crucial next step is to implement an effective review mechanism, also agreed in Paris, to revise national targets over time.

Energy efficiency gives us the power to make good that deficit. If we can double the annual rate of improvement in energy efficiency, to 3 percent per year, the more ambitious goal to which our governments have committed can be achieved. Next to the urgent environmental need, we know that clever use of energy will unlock a host of economic and social benefits. Best of all, solutions to this great energy challenge already exist.

Off-grid solar lighting is an important element of the policy mix that will drive down carbon emissions and accelerate global development. We don't have to wait for answers or new inventions. The technology we need is already transforming the lives of off-grid and urban communities in India and Thailand. ■

The role of innovation in developing competitive cities

By **Hazem Galal**, PwC Cities & Local Government Sector Global Leader and **Egon de Haas**, PwC Global Director Government & Public Services

Several megatrends such as accelerating urbanisation, technological change, demographic shifts, and climate change are reshaping our world. Cities are where these mega trends manifest themselves most clearly. To respond to disruptive developments, cities around the world, their governments and organisations must rethink the way they deliver their products and services. Public bodies and organisations of the future, including cities and local government entities, will need to espouse characteristics and behaviours that are radically different from the models of the past. We have distinguished four interdependent—must-have characteristics—that leading public bodies, including cities, need to demonstrate in order to be effective in achieving outcomes and impact. These characteristics are agility, innovation, connectedness and transparency (see figure 1).

Cities are the engines for growth and the competition amongst urban regions to attract visitors, talent, businesses and investments has increased. Innovation



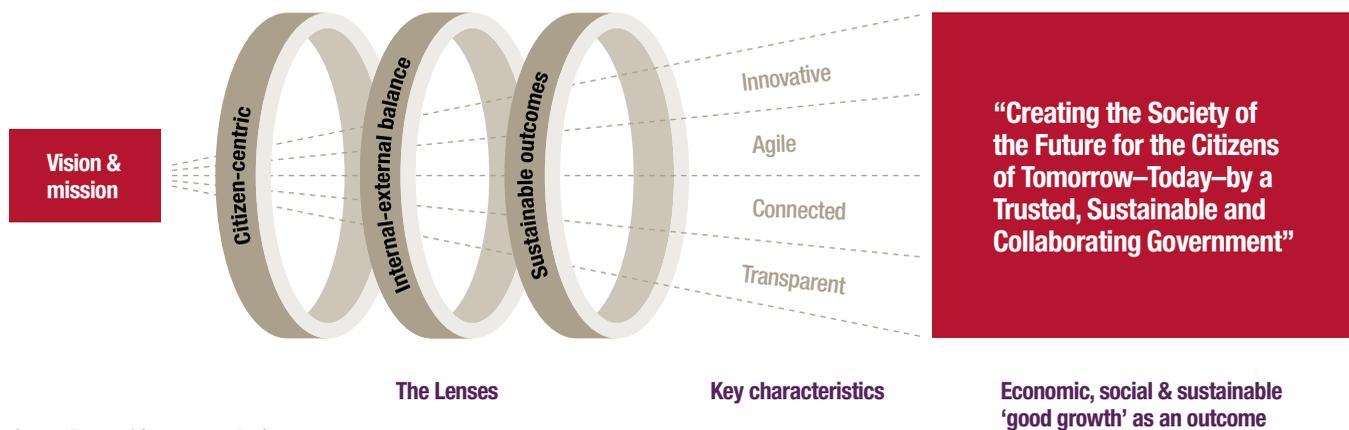
Hazem Galal, PwC Cities & Local Government Sector Global Leader and Egon de Haas, PwC Global Director, Government & Public Services

lies at the heart of the local government agenda for developing a sustainable competitive city as cities are the place where innovation is initiated, accelerated and adopted to deal with the challenges we face.

Different types of innovation

Tomorrow's leading cities need to be innovative and resourceful. However, innovation can have various definitions based on context.

Figure 1



Source: *Future of Government*, PwC

Innovation is the act of introducing something new; more than just about technology, it is about solving problems with new ideas—big or small—that create significant benefits. Innovation enables growth, and can cause creative destruction.

We have identified three main types of innovation:

- **Incremental innovations** are changes to an existing product or service. The changes to the technology or business model are primarily aimed at doing the same, but enhancing the process to produce the existing products or services in a more efficient manner. An example is E-government initiatives, whereby public services are delivered in a city online in a more efficient and effective manner.
- **Breakthrough innovations** make many more changes to technology or business models. They are often game changers that have a higher competitive advantage as they cannot be replicated. These include the rise of the ‘Sharing City’ concept where cities like Amsterdam, Berlin and Seoul are adopting the new business models from the sharing economy.
- **Radical innovations** create new paradigms and disruptive changes to the competitive environment for a product or service, often resulting in completely new products and services or new sectors. They are less frequent than incremental and breakthrough innovations but provide the highest competitive advantage. A prime example is the advent of cities around the world that are built from scratch, designed around shifting away from traditional ways of thinking. For example, Masdar City in Abu Dhabi is reimagining how we develop our cities and the corresponding infrastructure by embracing a mobility concept that is based on sustainable transport, rather than a traditional design based on vehicles.

The different types of innovation can occur at two levels: strategic and operational.

Strategic innovation

The future city needs to consider its role in local, regional and national innovation strategies, based on areas of competitive advantage. One approach, smart specialisation, involves formulating an economic agenda which builds on, and innovatively combines, existing strengths in new ways. This means identifying a city’s or a region’s competitive advantage or DNA and mobilising regional stakeholders and resources around an inspirational vision for the future.

There is also the rise of public entrepreneurs – individuals and organisations within the public sector that create new ventures and ultimately increase local, regional and national innovation absorption capacity. Their efforts are in turn championed by political entrepreneurs, who are key in channeling political will and vision to support innovative strategies. Many cities today are driving this type of innovation

and public sector organisations to deliver services faster, better and more cheaply, as well as address long-term challenges arising from social, economic, demographic, environmental and technological change. For instance, digital technology platforms (including open data, big data and analytics) are opening new opportunities to involve citizens in the design and delivery of smart city services, increasing opportunities to engage citizens in jointly producing innovative services and outcomes. Innovating operationally also includes encouraging an innovative organisational culture by developing an ‘incubating’ environment for ideas to grow and flourish. Ideas with potential can subsequently be accelerated for execution and implementation via a rapid prototyping and large-scale demonstrator approach that tests new concepts and ideas as a transformational project before scaling up for adoption at a wider level.

Innovation enables governments and public sector organisations to deliver services faster, better and more cheaply, as well as address long term challenges arising from social, economic, demographic, environmental and technological change

through so called ‘Development Boards’ which aim to pull together the power of the various stakeholders to deal with the strategic challenges the city is facing. Both Singapore and Amsterdam have developed highly effective economic development boards, which strongly involve the private sector and multiple stakeholders with the city.

Operational innovation

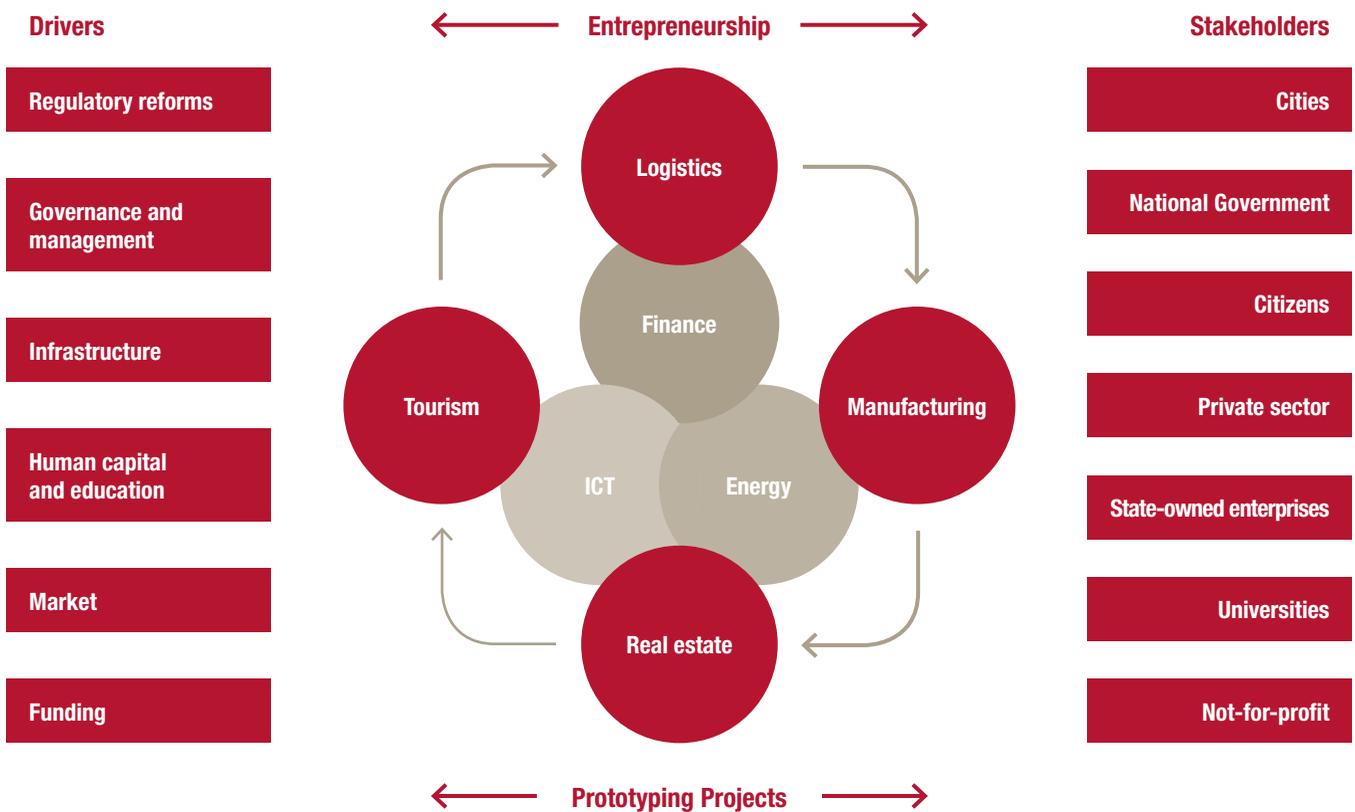
Operationally, delivering on promises to the citizen entails having the right (new) service delivery models for the right results, with an eye on measurable outcomes and real impact. Especially today, this means reconfiguring existing models or developing new ones to do more with less and increase productivity. Innovation enables governments

Innovation ecosystems

Whether the purpose is to restore economic growth (e.g. Detroit), diversify an economy (e.g. Moscow) or to find solutions for today’s societal challenges (e.g. Amsterdam) cities are developing innovation ecosystems. City government has to provide an environment that incentivises innovation. In some cases, it can even champion some evolving innovative sectors/industries until the private sector develops to the point where government involvement is no longer needed and it can step back, having created the conditions to unleash the creativity of entrepreneurs and start-up companies.

Figure 2 illustrates an example of such an innovation ecosystem showing the main stakeholders and drivers, several of which can be government enabled, as

Figure 2: Example of an innovation system



well as example focus industries and the main stakeholders that need to collaborate to enable the ecosystem to deliver.

Prototyping is the main feature of an effective innovation ecosystem. It allows for the rapid testing of ideas in real life conditions. Most recently, several cities have embraced the concept of a “living lab”, where innovative services and products are tested by citizens who are willing to experiment and provide feedback to enhance the design. The result is user-centric services that improve outcomes and impacts.

The innovation journey- from importing to producing

During the past few years, several countries and cities have started to move up the maturity scale, transitioning from “importing” innovation to “producing” innovation and ultimately utilising innovation as a “strategic asset”. The city of Dubai is a good example of a city that has moved along this continuum, having started off as a city that was importing innovation, to

become known for its creativity, its big vision to diversify its economy, and for producing its own innovation and turning creative ideas into action. Today, Dubai has further moved forward to produce many governmental and service innovations, with an ambition to become one of the world’s truly smart cities and to become a global innovation leader that utilises innovation as one of its strategic assets to create a comprehensive ecosystem that will foster further innovation, in line with the UAE’s wider vision.

Making innovation happen

As cities around the world look to embed innovation in the development of a sustainable competitive position, these are the key actions to consider to make it happen:

1. Lead by example to show that city leaders are embracing innovation.
2. Understand the DNA and the (sometimes) hidden dynamics of the city to generate innovative ideas.
3. Co-develop a shared vision with stakeholders for the sustainable

competitiveness and innovative power of the city.

4. Enable distributed leadership to generate and execute on the city’s vision and innovative ideas.
5. Define the innovation ecosystem that fits the city’s vision, strengthens the competitive advantages and utilises the power of all stakeholders.
6. Make clear choices on what will and will not do, and agree on responsibilities.
7. Continuously look for more agile ways to tackle the different urban challenges, like rapid prototyping.
8. Develop the organisational and governance structure (e.g. an empowered Chief Innovation Officer) to foster and streamline innovation.
9. Put in place the incentive systems that encourage city employees, the private sector, academic institutions, NGOs and citizens to put forward their innovations.
10. Create networks to learn from other cities’ innovations. ■

Edinburgh—Attracting World Class Talent and Technology

Increasing numbers of the world's most successful technology firms are choosing to make their home in Edinburgh. The city's swiftly growing digital economy is creating exciting new investment opportunities, increased demand for office space and a burgeoning real estate sector.

The City Council is playing a key role in fostering this success, providing a comprehensive suite of services to companies looking to invest in Edinburgh, to attract both leading multi-nationals and the best emerging talent. "We aim to be one step ahead, ensuring the city continues to flourish as a location for investment in skills and enterprise" says Andrew Kerr, Chief Executive of the Council. "The robust performance of Edinburgh's real estate market is underpinned by strong fundamentals: a resilient economy, a growing business base, a well-educated and well-paid population and large annual in-flows of visitors and students".

Edinburgh is one of the top mid-sized European cities for property investment

In 2014, the real estate advisory firm CBRE named Edinburgh one of the top mid-sized European cities for property investment. The city was also named by the JLL City Momentum Index as one of the top 10 best performing cities in Europe based on socioeconomic and real estate momentum and long-term success factors.

"Edinburgh's unique offer to global companies stems from the 'boutique' nature of the city" explains Andrew Kerr. "Edinburgh has all the attributes of a global centre of commerce while still retaining the quality of life, compactness and character of a far smaller city. Companies have access to world-class connectivity, blue-chip suppliers, and a large supply of skilled workers while benefiting from competitive operating costs and a quality of life that attracts global talent. The appeal of a local labour pool that includes over 150,000 graduates and an airport serving



The University of Edinburgh's soon-to-be-built 9,300m² Data Technology Institute, which will house hundreds of data researchers

over 100 destinations worldwide from New York to Qatar, coupled with prime office rents less than a quarter of those of the West End of London, is obvious".

For companies seeking research and development facilities, Edinburgh has a large skills base – over 30,000 people work in science and technology – and four universities excelling in a broad range of scientific disciplines. The city's strong academic network has been pivotal in encouraging growth across the science and technology sectors.

The School of Informatics of the University of Edinburgh is the largest school of computing in Europe, one of the largest worldwide, with over 450 academics and 850 students, and according to the national Research Excellence Framework conducts more world-class research than any other UK university. The university plans to construct a new Data Technology Institute capable of housing a further 700 people. The scale and calibre of the School of Informatics means that technology companies in Edinburgh have access to a regular source of high quality staff and intellectual property.

In life sciences, the symbiotic relationship between academia and the technology sector is epitomised by the BioQuarter, an ambitious translational medicine project that brings together the Royal Infirmary of Edinburgh, the University of Edinburgh's Medical School

and, from 2017, the Royal Hospital for Sick Children on a single site, together with the Scottish Centre for Regenerative Medicine, Queen's Medical Research Institute and "Nine", a business incubator for life sciences firms. In total, the BioQuarter brings together a critical mass of research expertise of over 1,200 researchers with specialised resources such as a clinical trials unit and imaging centre. This has yielded fruitful collaborations and helped foster new life sciences start-ups and spin-outs.

Examples of other active partnership initiatives include the Scottish Centre for Food Development and Innovation set up by Queen Margaret University as a one-stop-shop for food and drink manufacturers seeking expert support and Edinburgh Napier University's "expert centres" for academic support in fields such as geotechnics and timber engineering.

Edinburgh will be promoting its investment portfolio to international investors and developers at MIPIM 2016 in partnership with the Scottish Cities Alliance (SCA). ■



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Which city will be first to carbon neutrality?

Steve Hoare speaks to the mayors of Adelaide, Copenhagen and Ghent to find out where they are on the road to carbon-neutral status



Offshore and onshore wind farms form an essential part of Copenhagen's carbon neutral strategy

On the eve of COP21, the UN Climate Change Conference that took place in Paris in December, the Belgian city of Ghent announced its intention to strive for carbon neutrality. Ghent's declaration followed the likes of Adelaide, Copenhagen, Melbourne and Vancouver, each of which has stated its aim to be the first city to achieve carbon-neutral status.

Ghent's ambition is not as lofty as others. While Copenhagen believes it is on target to be carbon neutral by 2025 and the Australian cities are aiming to get there before that, Ghent said its commitment to the second Covenant of Mayors action plan puts it on track to achieve climate neutrality by 2050.



Photo: Stad Ghent

Daniël Termont, Mayor of Ghent

"It is important to note the city has not chosen the path of least resistance in terms of emission reductions," says Daniël Termont, Mayor of Ghent. "The city council explicitly supports a climate policy that is socially just and leads to structural solutions with long-term impact."

Copenhagen was the first city to announce its intention to become a carbon-neutral city back in May 2012. Some critics have pointed to the city's huge offshore wind farm as an unfair advantage and that using these to offset carbon emissions elsewhere relies on other cities or regions not achieving carbon-neutral status.

"The City of Copenhagen's goal to become carbon neutral in 2025 does not include the trade of carbon emissions," responds Morten Kabell, Copenhagen's Mayor for Technical and Environmental Affairs. "The exclusion of carbon trade means that the City of Copenhagen must set ambitious targets to invest in renewable energy production such as wind farms and sustainable biomass, but is also reliant on, for example, strong investment in energy efficiency in buildings, a shift in the transport sector towards sustainable fuels, and modal shifts involving people in Copenhagen."

Kabell goes on to explain that offshore and onshore wind farms form an essential part of Copenhagen's carbon neutral strategy and are also an important part of the Danish national goal to become independent of fossil fuels.

"The wind farms installed as part of Copenhagen's initiatives to become carbon neutral have an important part in the national agenda, also after 2025," he adds.

Critics focusing on wind farms are only looking at part of the picture, says Kabell. The climate plan includes several initiatives within energy production, energy consumption, mobility, and city administration initiatives.

"Each area is important for the long-term sustainability and liveability of the city," he says. "We are currently evaluating the climate plan and are making a new road map for the second part (of three) of the climate plan from 2017 to 2020."

Inter-governmental cooperation

Kabell's mention of the national agenda is a valid point because while cities might be leading the way on climate change they cannot act alone.

Termont explains: "Policies of other governments (such as regional or federal governments) have a big influence on, for example, housing and transport, and thus have an impact on emissions as well."

This is reflected in Adelaide City Council's partnership with the state government of South Australia, whose environmentally friendly policies have given Adelaide the impetus to aim for carbon neutrality.

"One of the things I noticed while in Paris at COP 21 in December, was the

uniqueness of the partnership we have here in Adelaide between the city council and the state government," comments Martin Haese, Lord Mayor of Adelaide. "Effective collaboration between the city and the state is essential for real progress."

South Australia was the first state to legislate to reduce greenhouse emissions when it passed the Climate Change and Greenhouse Emissions Reduction Act in 2007. It is on the basis of this act that the city and state formally established their relationship to make Adelaide the world's first carbon neutral city with the signing of a Sector Agreement in November last year. South Australia is planning for the whole state to be carbon neutral by 2050.



Photo: Adelaide City Council

Martin Haese, Lord Mayor of Adelaide

Adelaide might not have been the first to announce its aim but it has certainly been the most *gung ho* in stating its ambition to be first.

"Creating an opportunity to lead the world in this space opens up a myriad of opportunities for everyone and it just makes good sense," says Haese. "As an entrepreneur myself, I can see the enormous benefits the 'business of climate change' has for our economy—whether you are a climate change believer, sceptic or agnostic, I've never met anyone who does not believe in the opportunity for lower energy costs."

Being first is particularly important for Adelaide. While its ministers joke

about the enjoyment they glean from beating Melbourne, the two cities are in direct competition when it comes to attracting renewable energy companies and jobs.

“In addition to saving energy costs, and therefore business expenses, climate sustainability also presents for the city and the whole state wonderful opportunities to drive business,” continues Haese.

He highlights areas such as energy efficient manufacturing, eco-tourism, low-cost business development, start-ups and the digital economy. In the first six months of the Sustainable City Incentive Scheme, the city received around 60 applications—38 approvals have been granted already, with around 10 percent of these coming from businesses.

“What a great start!” says Haese. “But it really is just the tip of the iceberg. Interest in battery storage systems will continue to grow and it’s important that we establish a critical mass, so the installation of such systems becomes more and more affordable to everyone. Already we have seen some of the major energy retailers consider subsidising battery storage making it even more affordable to business and the community.”

A little local difficulty

Kabell welcomes the competition. He believes it is healthy. And he stresses that Copenhagen has set out to be the first carbon-neutral capital in the world. The other cities, which have declared their ambition, are not capitals.

“When that is said I can only encourage other cities around the world to aim to be carbon neutral—the sooner the better. We don’t care about being first, we care about being carbon neutral.”

Furthermore, there are other benefits to competing with neighbouring cities for investment in the green economy. Acting now, makes the job of reducing emissions, for which cities play an essential role, easier in the long-term.

“The longer you wait, the more difficult it will become to mobilise different actors—citizens, companies, organisations and institutions—to take part in that transition,” says Tine Heyse, Ghent’s Deputy Mayor for Climate and



Adelaide is a compact city, which is surrounded by 930 hectares of parkland

Adelaide's achievements on the road to carbon neutrality

- The city has decoupled greenhouse gas emissions from economic growth, which has seen a 20 percent reduction in greenhouse gas emissions while increasing the city's GDP by 28 percent and increasing residential growth by 27 percent, all since 2007. “Decoupling is the holy grail of the sustainability movement,” says Haese.
- Forty-one percent of the state's energy supply is already coming from renewable sources.
- Adelaide is a compact city, which is surrounded by 930 hectares of parkland. Already rated highly on numerous global liveability indexes.
- Twenty-six percent of South Australian residential roof tops already have solar PV installed, making it one of the higher penetration rates in the world and opening the door for the installation of battery storage technologies.
- The city's Sustainable Incentives Scheme launched in 2015 provides grants of up to 5,000 Australian dollars (US\$3,450) for various sustainability measures for residents and business. The State Government's commitment to match funding on a dollar for dollar basis is creating an environment that is advantageous for business too.
- The city's 1 million Australian dollar (US\$690,000) Greener Streets Fund sees a tangible commitment to the introduction of green walls and tree planting in 2015/16.
- In November 2015, Adelaide held the first driverless vehicle trial in the southern hemisphere.

Energy. “As we have noticed in Ghent, mobilising actors in a transition to a climate neutral city takes time.”

When it announced its plan to go carbon neutral, Ghent became the first city to sign up to the second Covenant of Mayors with targets which are significantly more demanding than the 2020 target of the original Covenant.

Kabell says some of Copenhagen's biggest hurdles thus far have been the retrofitting of buildings, smart city solutions, recycling and the separation of plastic plus the introduction of new fuels in the transport sector.

Termont says that in Belgium the housing sector is characterised by a fragmented landscape of actors from



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Photo: Tom Roelvelde

Ghent became the first city to sign up to the second Covenant of Mayors

Ghent's achievements on the road to carbon neutrality

- Ghent is already purchasing 100 percent green power.
- The Pilot Energy Coaching (2012 – 2014) project addressed companies with minimum annual consumption of 1,000 MWh, which were willing to reduce their energy consumption. Fifteen Ghent companies participated in the project and their efforts resulted in an annual CO₂ emission reduction of 1,820 tonnes, energy savings of 7,397 MWh per year and financial savings of €360,000.
- The city renewal project in the Lederberg Leeft district (2010 – 2013) not only introduced substantial subsidies (€2.5 million) for retrofitting but also developed the infrastructure and quality of life in the district – e.g. new slow road connecting the district with the city, a 'living care zone' to help elderly people stay in their own homes as long as possible, new green parks and the development of new houses.
- The most energy consuming public lights were replaced resulting in annual CO₂ emission reduction of 1,094 tonnes and yearly energy savings of 3,838 MWh. €3.2 million was invested in the project.

which it is difficult to find consensus. And it is not just reaching out to builders and other trades.

"We have to convince people that when renovating their houses, they have to be ambitious enough in, for example, installing enough roof insulation," adds Termont. "Another difficulty in this area is urban renewal and the demolition of houses, which are in very bad shape, and for which local authorities have very few financial means."

Private and social housing is just one of the six key pillars of Ghent's climate plan. The others are enterprises,

Private and social housing is just one of the six key pillars of Ghent's climate plan

renewable energy, transport, food and "our own exemplary role".

Transport is another difficult area as it is highly influenced by the policies of other regional or federal governments. Heyse points to investments in public transport or fiscal regimes, which offer

incentives for employers to pay their staff through company cars and company fuel rather than by raising salaries. And when it comes to traffic, a lot of it is just passing through on highways. This is beyond the control of city authorities.

Even the area of renewable energy is not simple. Due to high population density and less open space and green areas in Belgium, there are more restrictions on the development of certain renewable energy technologies such as wind turbines.

Each city will have to figure out its particular sticking points for itself. It is clear though that the more stakeholders involved the better.

"It needs to be said that setting out a target so far in advance is a challenge," concludes Termont.

Inspiring Asia, Africa and beyond

In some respects, Copenhagen has been on this journey much longer than the other cities. It can already point to successes with non-motorised transport with a long history of bike use. A remarkable 45 percent of trips in Copenhagen were undertaken on bicycles during 2014 and more than 60 percent of all Copenhageners use their bike every day for commuting to work or study.

"We are strong on energy efficiency and not least district heating," says Kebell. "Ninety-eight percent of all heat consumption in Copenhagen is covered by district heating and already 53 percent is from renewable energy," noting that these are just a few examples of over 50 different initiatives that have been launched.

Meanwhile, Ghent's declaration and signing of the second Covenant of Mayors has spurred a whole host of cities into action. Belgian neighbour Liège has signed up to the Covenant and others have signalled their intention to do so, including the Italian cities of San Giorgio di Nogaro, Orgoloso, Arpino and Moricone plus Greece's East Mani and the Swedish city of Lessebo.

They have set their sights lower for now. Environment expert Marc Schlitz from Liège's city strategic department points out: "Right now it would be too ambitious to aim at being carbon neutral as there are plenty of socio-economic

components that need to not only share this ambition but also get engaged in the process, to take action and to ensure continuity in the long run.

“Considering that we have one of the oldest housing stocks in Belgium and the current situation as regards mobility and economic poverty, the constraints are very strong at local level. Moreover, indirect emissions linked to local consumption of external products and services are huge and not taking them into account in claiming to be carbon neutral would be quite hypocritical.”

Nevertheless, he points out that it is realistic to go beyond a 50 percent

reduction and to get close to an 80 percent reduction by 2050. But there are some fairly big “ifs”, according to Schlitz. Hard investments need to be implemented, which are related to financial means and limited public indebtedness. The local community also needs to be galvanised. Compensation or externalisation processes need to be set up outside of Liege, such as reforestation or sustainable energy production. Again the need, for inter-governmental cooperation becomes clear.

While it is easy to be enthused by the trailblazers’ achievements, it is important to scale up to the number of cities setting

out on this path if the aggregate reduction in emission is to be achieved.

The good news is that local government action is becoming more coordinated. At COP21, a formal cooperation was announced between the European-backed Covenant of Mayors and the Compact of Mayors, a global collective launched by UN Secretary-General Ban Ki-moon at the UN Climate Summit in September 2015, to tackle climate change under the leadership of city networks ICLEI, C40 and UCLG.

The Covenant of Mayors now covers 57 countries: five Japanese cities have signed up and there are initiatives underway to take the Covenant to the Americas and Africa. At COP21 local leaders from Durban (South Africa), Nairobi (Kenya), Dakar (Senegal) and Bangangté (Cameroon) discussed how to take this forward.

Each will have its own unique challenges but the example set by the likes of Adelaide, Copenhagen and Ghent is clearly taking hold. ■

At COP21, a formal cooperation was announced between the European-backed Covenant of Mayors and the Compact of Mayors, a global collective launched by UN Secretary-General Ban Ki-moon at the UN Climate Summit in September 2015

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The smart city ecosystem

By **Rob Sheppard**, IoT Solutions Marketing, Intel EMEA

There's no doubt that technology is a key enabler for smart cities. Improved performance in smaller form factors have opened up all kinds of theoretical possibilities. Ongoing reductions in costs have made it now possible to realise many of those theories.

But at heart, the creation of the smart city is not a technology issue. It has always been about liveability: about enabling a greater number of people to live together in comfort and with efficient use of limited resources. Cities that achieve this goal can expect to attract a greater number of businesses and individuals that can boost the local economy and continue the virtuous circle of creating an appealing place to live and work. Technology in this instance is the key enabler—but it is not the primary driver.

What makes this particularly challenging is that there is no single route to developing a smart city. Instead it is more about joining up a series of verticals like energy or transport. And since each city is unique, and has its own priorities and preferences, there is no single package of solutions that are universally applicable. The smart city is the very definition of a bespoke solution.

What's more, the underlying competition between cities means there is little natural incentive to change this situation. Opportunities for sharing knowledge and experience are limited, when urban authorities believe themselves to be competing for economic advantage. The cost of technology may be lower than at any previous point, but the greatest economies of scale are available when it is packaged, commercialised and repeatable.

Finding a way to solve these underlying challenges is essential if we are to develop cities that can meet the demographic and environmental challenges we face. Understanding where opportunities for monetisation lie will be key to understanding vested interests, and



Photo: Intel Corporation 2016

Opportunities for sharing knowledge and experience are limited, when urban authorities believe themselves to be competing for economic advantage. The cost of technology may be lower than at any previous point, but the greatest economies of scale are available when it is packaged, commercialised and repeatable

establishing organisations who are willing to invest and drive solutions—whether they are from the vendor ecosystem or city organisations themselves.

The recent Paris COP21 agreements may also prove to be a game-changer, by giving democratically elected governments incentive to mandate carbon reduction measures—in which smart transport, smart buildings, and smarter energy distribution play a critical role.

There could be an opportunity for cities to create turnkey solutions and offer these as a revenue-generating consultative service to others.

Technology for smart cities is being developed by a broad ecosystem of players. The emphasis is on interoperability and ease of integration. It seems likely that moving forward plans for smart cities will require a similar focus on developing an interoperable, mutually beneficial ecosystem. ■



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Enabling smart cities with urban platforms

Andrew Collinge, Assistant Director, Intelligence and Analysis, Greater London Authority, and **Norbert Koppenhagen**, Vice President for Research & Innovation at SAP explain the need for an interoperability framework of open standard interfaces to escape the danger of 'vendor lock-in' and silos

In recent years, cities are looking increasingly towards ICT in order to address the issues stemming from their rapid growth, high environmental impact, inefficient use of energy, tremendous economic footprint and stagnating or even deteriorating living standards.

The deployment of ICT solutions in order to improve the efficiency and the environmental wellbeing of the different cities' subsystems such as mobility, energy, e-government, health, water, waste and others, has given birth to the notion of so-called smart cities and communities. It is widely believed that the so-created smart cities will improve the liveability and attractiveness of cities and communities for citizens. Via the increased efficiency and decreased environmental impact, they also contribute to the achievements of the ambitious EU environmental and energy targets.

In spite of the fact that the concept has existed for some years already, the progress so far seems slow, sporadic and inconsistent. There are a number of issues preventing smart cities from happening and reaching their full potential. Most of the initial smart city solutions have been limited to one domain (like transport or energy) and implemented on silo solutions thus preventing the possibility for cross-sector services and applications and skyrocketing the cost.

The initial solutions have been built in isolation and are often proprietary thus creating the danger of vendor lock-in. The danger of such vendor lock-in is scaring the cities and discouraging investment on their side. Due to the closed and non-standard nature of the programming interfaces, the applications and services



Andrew Collinge, Assistant Director, Intelligence and Analysis, Greater London Authority, and Norbert Koppenhagen, Vice President for Research & Innovation at SAP

The deployment of ICT solutions in order to improve the efficiency and the environmental wellbeing of the different cities' subsystems such as mobility, energy, e-government, health, water, waste and others, has given birth to the notion of so-called smart cities and communities

that are being developed are non-portable (non-reusable elsewhere) thus keeping the price of such solutions prohibitively high and excluding SMEs and other small companies from the smart city market.

And cities and small companies are not the only ones suffering from the situation. Big companies also face difficulties selling their equipment and

services to the hesitant and cash-strapped cities and are therefore contemplating freezing the development and marketing of such solutions.

The most efficient and future-proof way to address these issues is the creation of an interoperability framework of open standards and open interfaces which will define so called urban platforms. Urban

platforms are software mediation layers that consists of a number of common functionalities based on open and in most cases widely used standards, and offers standard and open application programming interfaces towards the service/application providers, other platforms and the smart city sectors. These platforms can aggregate the data streams from the different sectorial systems and process and store the data and expose it in a structured standardised way to the application/services layer.

A number of platforms have been developed so far but due to the lack of a standards framework they are often proprietary and virtually never interoperable with other platforms, applications and services.

To address the issues and foster the development of an interoperability standards framework, the European Commission has created several initiatives meant to help remove the obstacles. Within the main smart cities instrument of the European Commission, namely the European Innovation Partnership on Smart Cities and Communities (EIP-SCC), an action sub-cluster on urban platforms has been created.

This sub-cluster brings together relevant stakeholders on the topic of urban platforms. First and foremost, these are the cities, otherwise known as the demand-side. As a first step, the demand-side of the sub-cluster made an inventory of the urban platforms deployment situation in Europe via a representative survey. The results were clear—75 percent of the cities had no urban platform. The main reasons for this were poor knowledge of the landscape and lack of confidence by cities; the fact that the cities struggle to get different silos to work together so prohibiting action; and last but not least, budget constraints.

Based on these findings, a strong demand-side group led by the Greater London Authority and comprising cities of varied size and geographical spread interested in the development of next generation urban data platforms are hard at work to develop a set of vendor-neutral requirements based around using data to make a real difference to the lives of citizens.

The group is also seeking to gather relevant use cases and build a strong executive and political support in European cities. Another important task of the group is to work on motivating and accelerating the adoption of urban platforms based on open standards as well as smart cities services and applications. To that end they will also collaborate actively with industry to develop procurement templates based on industry standards to be used by

A number of platforms have been developed so far but due to the lack of a standards framework they are often proprietary and virtually never interoperable with other platforms, applications and services

the cities of Europe and beyond when procuring the technically complex state-of-the-art urban platforms and smart cities solutions. The group also have an important role to play in scrutinising the work of the industry-led standardisation activities.

Apart from the city-led group, within the EIP SCC sub-cluster on urban platforms and with the active participation of the EIP-SCC leaders and community, the creation of an industry-led Memorandum of Understanding (MoU) on urban platforms has been fostered. Its members come from different industries and vary in size from small to industrial giants. The goals of the participants in this MoU are to:

- Work with cities to develop tailored operational frameworks (both for installation and servicing phases) based on different business models (e.g., own city infrastructure, cloud-based solution, etc.);

- Develop a set of principles and a joint reference architecture framework to enable interoperability, scalability and open interfaces to integrate different solutions;
- Develop a joint data and service ontology to be used by individual smart cities commercial products and solutions;
- Accelerate the adoption of the developed framework by standardisation bodies; and
- Comply with any joint standards and framework when developing individual smart cities commercial products and solutions.

To further help the standardisation process, the European Commission, via the Horizon 2020 programme, is also sponsoring a coordination and support action (CSA) called ESPRESSO, which in collaboration with the EIP-SCC and the MoU and after a broad requirement-gathering consultation with the stakeholder community will work towards developing a standard framework as well as vocabularies and ontologies. This will help in the standardisation process by filling in the identified standardisation gaps.

The CSA is led by an experienced and influential standards organisation and has a broad-coverage consortium consisting of standards developing organisations, industry and cities. The duration of the action will be two years and it will be finalised by the market adoption of the defined standards and framework and clear definition of the next steps.

These initiatives and the large deployment of standards-based urban platforms aim to lead to the fulfilment of the ambitions of the participating organisations written down in the MoU:

- to create a strong EU smart city market for urban platforms by 2018; and
- to ensure that the market of 300 million residents of EU cities use urban platform(s) to manage their business with a city and that the city in turn drives efficiencies, insight and local innovation through the platform(s) by 2025. ■

How infrastructure planning is being used by LA as a blueprint for sustainable urban development

Between now and 2025 the population of Los Angeles will grow by around 2.5 million people. With one eye fixed on meeting the demands of these new and existing residents for energy, water, transport, and communications, the city is investing US\$40 million in infrastructure that could signal the start of a new era of sustainable development

In 2015, the government of Los Angeles, led by Eric Garcetti, Mayor of Los Angeles, released the city's first-ever comprehensive sustainability plan. It details short and long-term objectives for enhancing its position as one of the world's most liveable cities while maintaining commercial and environmental credentials.

Home to entertainment, aerospace, tourism, and technology industries, Los Angeles already has an economy that contributes around 5.2 percent to national GDP and is undergoing a US\$40 million upgrade of regional rail, rapid bus, and other transit infrastructure to ensure its businesses and supply chains remain competitive.

This investment represents the largest public works project in the United States, and while these developments are underway, a new *Blueprint for a 21st Century Los Angeles Infrastructure* published by the Los Angeles Area Chamber of Commerce and Siemens, has begun exploring the future benefits of infrastructure planning.

"As many of us travel around the world and see the investments that are being made in other cities, we recognise that it is essential for us to compete, and with continued population growth the overall goal of the blueprint is to demonstrate the need for both public and private investment in urban infrastructure," says Gary Toebben, President and CEO of the Los Angeles Chamber of Commerce.

"Existing infrastructure in some areas of the city is approaching 100



Gary Toebben has served as CEO and President of the Los Angeles Area Chamber of Commerce since 2006

years old, and to move forward we'll need everybody to be singing from the same songbook about the importance of infrastructure. We particularly need our elected officials and our businesses to understand the magnitude of the infrastructure improvements that will be required in the community if our businesses are to grow and create jobs."

The blueprint offers insights into four infrastructure themes that emerged at a joint event held in 2014 by the Chamber of Commerce and the *Los Angeles Times*, where leaders of large public and private sector organisations came together to identify pressing infrastructure challenges and opportunities facing the local economy.

With over 33 million registered vehicles and 23 million licensed drivers in the State of California, mobility is at the core of the document, with the average driver in Los Angeles said to waste 64 hours annually navigating the city's gridlocked roads.

Ensuring that the 15.6 million that will live in the city in 2025 are capable of moving easily across 80 districts is, however, not the only area to assume importance in the blueprint. There are also sections on how the right investments in energy, water, and telecommunications infrastructure could yield positive benefits for the city.

Environmental record

One area where Los Angeles has excelled over the past half-century is in reducing water and energy consumption. According to Martin Powell, Global Head of Urban Development at Siemens, the city consumes less water than it did in 1970 despite a 33 percent increase in population. He also describes the current goal to cut water use in the city by a further 20 percent by 2017, as remarkable.

In addition, Powell, who has previously advised Boris Johnson, Mayor of London, as the Director of Environment, believes the city may have one of the lowest water rates in the world but points out that this may not necessarily be a sustainable model.

"Low rates aren't always a good thing because they can lead to a lack of investment in maintaining infrastructure," he says. "However, by

increasing water rates a little, funds can be made available for reducing leakage, adding automation and other technologies, and protecting infrastructure, which can bring both water use and costs down.”

This recommendation was met with a standing ovation when the blueprint was presented to the government, much to Powell’s delight. Nevertheless, he says that like other cities, big infrastructure projects can take years to approve and that there is a need for simplified environmental standards and decision-making processes.

European cities like Copenhagen, and can also measure carbon emissions, job creation, and other metrics to map plans before proceeding with large-scale investments that can prove costly if not appropriate.

“Los Angeles lends itself very well to innovation centres and a low emissions zone, which have proven helpful in regenerating parts of other cities like London, but it is important to recognise that there is a car culture and the road system is already in place, so public transport reliance may never be as much as London,” says Powell.

date,” says Los Angeles City Controller Ron Galperin. “The *Blueprint for a 21st Century Los Angeles Infrastructure* offers us intriguing ideas for how businesses and governments can work together to plan and build the infrastructure necessary for the future.”

As cities around the world grapple with growing populations, infrastructure investment may yet prove to be the catalyst to unite the private and public sector towards the mutually beneficial goal of fluid urban transport systems.

“Infrastructure investment is critical to the ability of companies to grow, create



The US\$6.3 million extension of the Metro Purple Line will generate 78,000 new daily trips across the entire network and create 52,000 jobs in the region

Image: LA Metro

“Los Angeles has managed to couple economic growth with environmental benefits in ways that a lot of other cities should look into, especially when it comes to the link between wealth creation and low consumption,” adds Powell. “One of the next steps will involve measuring the impact of making different infrastructure choices on the city.”

To achieve this Siemens hopes to be able to deploy its City Performance Tool in Los Angeles. The simulation tool has been used to evaluate the alternative technology options available to major

Performance enhancement

Before any measurements can commence, the Chamber of Commerce and Siemens plan to provide a more detailed plan to city officials on specific recommendations it has for each of the four infrastructure groups identified in the blueprint. These will be based on benchmarks established with other peer cities in the blueprint as well as data from on-going research, something that is welcomed by the municipality.

“The City of Los Angeles’s residents, visitors and businesses deserve an infrastructure that’s robust and up to

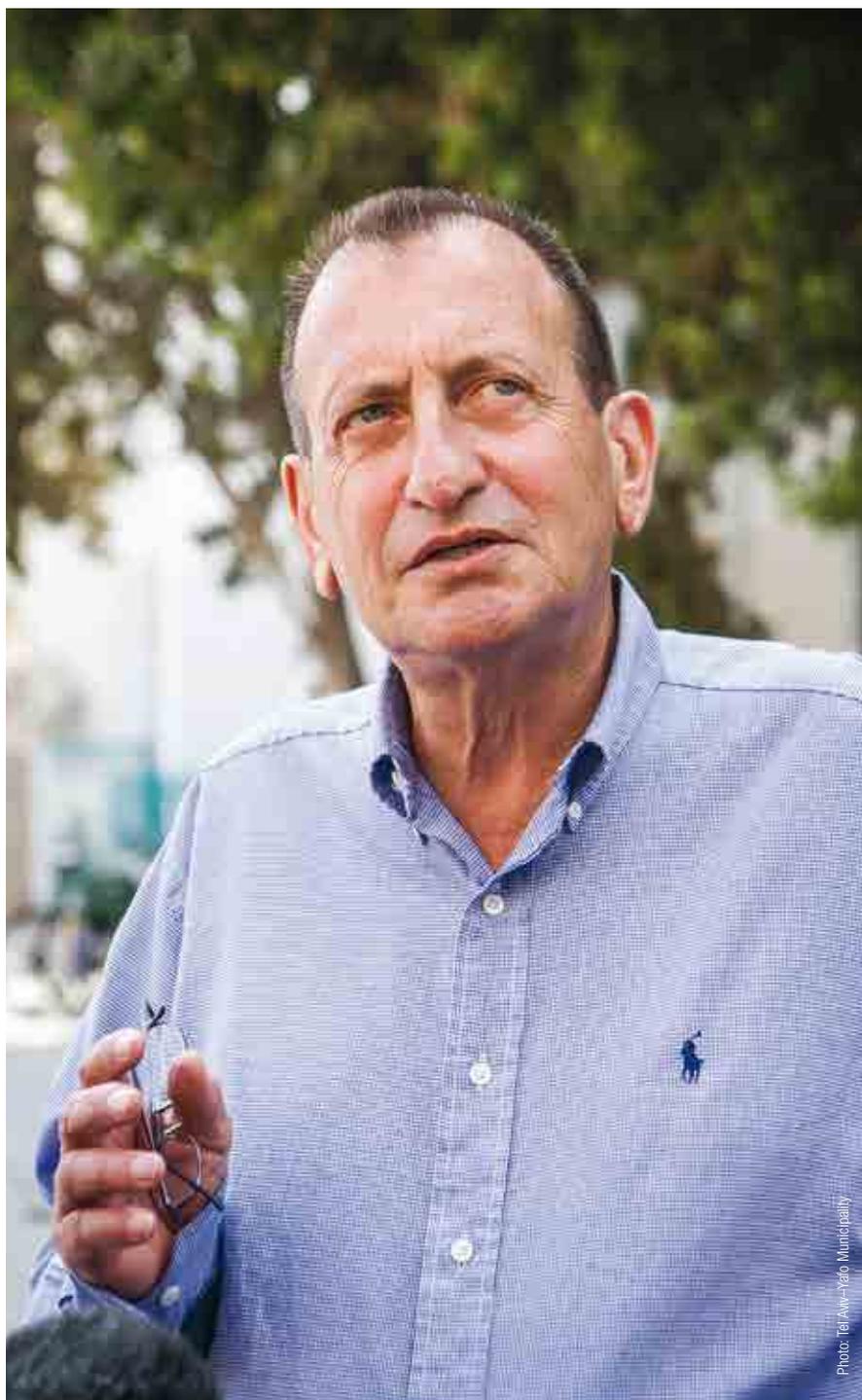
jobs, and attract people to work in Los Angeles, and we must combine the best of [the city’s physical and human assets] to compete with other cities,” says Toebben.

Crucially, like other cities, the ability to create a competitive environment in Los Angeles is tied to the achievement of Sustainable Development Goal 11, to make cities inclusive, safe, resilient and sustainable, especially with cities increasingly being seen as hubs for ideas, commerce, culture, science, and social development. ■

Brought to you in partnership with Siemens

Interview: Ron Huldai, Mayor of Tel Aviv

Tel Aviv has been dubbed the 'start-up city in the start-up nation'. **Jonathan Andrews** met with the mayor, **Ron Huldai**, to find out if other cities can learn from Tel Aviv's example



You were first elected in 1998, so how has Tel Aviv changed in those 17 years?

The city today is completely different from what it was. The city I got when I became the mayor was a neglected city. There was a negative balance of immigration—more people left the city than came. It had a deteriorated infrastructure, in all areas—roads, streetlights and sidewalks. There was a huge deficit and huge debts to banks and suppliers.

I had a problem in paying staff salaries at the beginning. Within four or five years we managed a real turnaround and we jumped to a balanced budget. Since then we have had 13 consecutive years of balanced budgets. We are investing four times more in infrastructure and facilities. People then recognised that this city is a good place to live in and the balance of immigration changed completely. Everyone now wants to live in the city of Tel Aviv, so the price of real estate is going up and we are growing. We have doubled the number of kindergartens in the last 15 years and Tel Aviv is a very vibrant and prosperous city.

We also believe that the city is not just a city here in the state of Israel, but a model for democracy and pluralism. It is a model for tolerance, art, culture, science, research, rational thinking, and one that is open to the world. We are a global city and a home for every minority. These are not just phrases or slogans; the city invests 6.5 percent of its total budget in art and cultural activities when the state of Israel only invests one-third of a percent.

This city became, who could believe it, the most gay friendly city in the world, and we have received other recognitions. We are not only the nicest beach city in the world but also the second best city in the world to open a start-up.

Photo: Tel Aviv-Yafo Municipality

You have doubled the number of young people in the city but it is still affordable? One of the dilemmas of becoming a successful city is a rising cost of living, how are you tackling that aspect?

We are the only city in the world that when the price of real estate goes up, the residents say the mayor is lousy! In Israel there is only one housing market, we are too small a country. Every apartment we build here, everyone in Israel is competing for it. It is the same market.

We are the spearhead of any effort to show the government how to deal with the cost of living by issuing or bringing affordable housing, or rental subsidies for students. We are trying to push the government to legalise affordable housing in city plans. We are trying by all means but there is no way for the city of Tel Aviv to deal with it because it is a national issue. The scarcity of apartments and housing is an issue all over the country. In Israel it is more problematic because we lack a sufficient public transport system. When you don't have a good public

transport system the pyramid of house prices is steeper.

You mention culture being an important aspect to the city's success. Do you think this cultural push has created the start-up scene in Tel Aviv or has the start-up scene pushed the cultural scene, which is driving which and I suppose what would you say to mayors who are trying something similar?

The centrality of Tel Aviv is in one way a big name but in practical measures it is the centre of London, because we don't have a Greater London. So the numbers are unique. Fifty percent of employees from the banking industry are working

in Tel Aviv, 70 percent of people in Israel travelling by train are going to and from Tel Aviv. Over 420,000 residents and 1 million commuters are coming in on a daily basis. Seventy percent of the country's theatres are in Tel Aviv, half of those in the city, and the other half just outside Tel Aviv. So the entirety is huge, and the attractiveness of the city is that everything here is close and human.

When you go out into the streets of Tel Aviv, people from one side of the city can meet with people from the other, not like in big cities which can be divided in a way as once you go and live on one side, you never really go to another. The distances here are very small. ▶

We are trying to push the government to legalise affordable housing in city plans. We are trying but by all means there is no way for the city of Tel Aviv to deal with it because it is a national issue



Photo: Tel Aviv-Yafo Municipality

Huldai alongside a Tel Aviv sharebike which he implemented after a meeting with his counterpart in Paris



Photo: Kfir Shani

The municipality provides a startup lab in the city library and another in the north of Tel Aviv, and more than 50 co-working spaces across the city

We have the highest number of start-ups per capita and density in the world, and in fact the most important thing is the city has the best ecosystem for startup people

You've dubbed Tel Aviv the "start-up city of the start-up nation" with the largest number of start-ups outside Silicon Valley. How was this achieved?

For a lot of reasons. Our people are creative. I used to say, I don't know why they are so creative but once I identified that fact I began to try and empower the process by providing Wi-Fi in public squares and opened all of the city databases that we have for start-ups. We opened a start-up lab in the city library and another in the northern part of the city and more than 50 co-working spaces across the city. We have the highest number of start-ups per capita and density in the world, and in fact the most important thing is the city has the best ecosystem for start-up people. We have excellent public spheres, excellent food, excellent nightlife and culture. This is the perfect ecosystem for start-ups.

Is it something unique to Tel Aviv or could it be applied to other cities?

The issue is not competition here in the city of Tel Aviv, I compete, or Israel competes with Silicon Valley, Berlin, London or Sydney. This is the problem of Israel, it is not a competition of cities within Israel. When somebody asks me, all I can tell them is that this is the way I did it.

In October, Tel Aviv and Berlin signed an agreement to promote innovation between the two technology cities. What will this entail and is this a dilemma, on the one hand you compete with other cities and yet want to share ideas?

It is a dilemma but when I think that if we would like to maintain our position in the start-up world the key is by also cooperating with others, bringing different cultures to the brainstorm. If they are sending entrepreneurs here, we

will help them to integrate, to find their way, to get the visa, and vice versa. Once our citizens go there I hope and expect them to do the same. I don't think I can stop our young people from going there because they are wanting to go. On the contrary once they are there I want them to be accepted in a good manner.

Which cities do you look to as examples and with which cities do you most closely work sharing Tel Aviv's examples?

There is no specific answer. I am trying to get everything from everywhere. Mayors all over the world, once they meet, they have within a couple of minutes interesting conversations and the answer is very clear. We all deal with the same issues. We deal with sewage, transport, welfare and education. But we have different ways of solving problems so we listen to each other to find out if we have a good idea to solve something. For example, our bike sharing system happened because I was a guest of the mayor of Paris. He was the first one to do it on a large scale, so I decided to do it.

Barcelona is an excellent example for me because it is on the Mediterranean. It has the same climate, and in a way, we have the same temperament, so it is an

excellent example from where I get a lot of ideas. Europe as a whole has good examples on housing. So this is the way I look to it, I can't say that there is only one particular model for something.

It is often said that city mayors are the most pragmatic of politicians. Does this give mayors more common ground and make it easier to build relationships and reach out to other cities in the region? Do you have relations with cities in the West Bank?

We [mayors] are very political because we are dealing with people, the difference is that we do not see ourselves as 'politicians' as such.

We don't have connections with those cities [in the West Bank] and it is unfortunate. I don't think the time is coming. We are trying to undertake mutual projects with the West Bank about water and sewage because we are in the same boat. We are trying to get the European Union to become involved but to say that we have a good relationship with cities in the West Bank, no. It is unfortunate.

Did your previous jobs as fighter pilot and school principal prepare you well for city politics?

I am a grandfather of nine, this is more important! It didn't prepare me for politics but I think my professional life, not as a fighter pilot but as an air force commander—and from being even a member of a kibbutz and school principal—I think it brought me a perspective about life—about a way of doing things. There is a culture in the air force, of long term planning, about being precise, about an appreciation of time and being professional, getting results. It was always management. My air force base that I commanded was bigger in size than the city of Tel Aviv!

This edition of *Cities Today* includes a focus on resilience. What was your reaction to the COP21 agreement and what types of resilience in regards to climate change is Tel Aviv facing and what is the city undertaking to tackle these?

It is good question but (looks out the window onto Tel Aviv for 30 seconds)... I am trying to be honest, how much can

a city this size which is 14 kilometres long and three and a half kilometres wide influence the climate? The most important thing is that I am dealing with an Israeli issue and not an issue for the city. But if you look at the details you will find out that if, 17 years ago when I entered office, we had more than 90 days of poor air quality, today we have less

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than 19 days of poor air quality, and some of those 19 days are a result of dust from the desert which we have no influence over. I cannot change it! It comes from the desert of Saudi or the Sahara, it is all over the Middle East. But if you look at the details you will find out that in a lot of cases we did a lot. We were the first to initiate standards for green building a couple of years ago.

We, the mayors in the country, the initiators, we signed the treaty and pushed the national government to be part of it. I cannot say that we are not active but if you think we can influence the world, well, it is a lot more important what Putin and Obama are deciding than what I am.

Even though cities have taken a lead on this issue and driven national governments to take action?

Even if you speak about cities, it is different when you talk about Beijing, one of our sister cities, and Moscow. Their size is equivalent to the whole of Israel and they have much bigger populations.

Turning to mobility now, a metro system has been on Tel Aviv's drawing board since the 1960s, and then revised in the 2000s as a light rail system that began construction in August 2015. Was that the one remaining issue that was holding Tel Aviv back to becoming a fully modern international metropolis?

This has been the biggest obstacle for furthering the development of this city.

It is also one of the biggest obstacles to improving the quality of life for our citizens. People spend so much time in their car and on their way to and from work. The new metro will create a different quality of life. This is the most important factor and we are lagging behind the developed world by maybe two generations.

The fact that we are only starting now is a joke. It has been too little, too late but at least we have started. It now seems to be serious, also it is not in my hands, it is an intergovernmental problem including five municipalities. The length of the light rail line is 22 kilometres, so it's not very long, and it's not a real metro, only light rail with half of it underground.

We are still lagging. The reason why it took so long was the weakness of our governing system. The mayor should have a lot more power. Everywhere else in the world transport is in the hands of the mayor or mayors of a consortium of cities. Israel is the only country in the world where transport is managed by the central government. It can't work this way.

I'm also not having a lot of success getting our government to move from its position. During one of the previous governments, a law was submitted to the parliament and the minister of transport vetoed it.

When elections are due in 2018 you will have served 20 years as mayor. What are your future plans?

In Israel who knows what can happen three years from now. There are three options. One is to jump to the national level, one is to continue being the mayor, and the third is to retire—by then I will be 74. I have too much time and energy to be a full time grandfather but I don't know yet. ■

The value of global standards in city management

US editor, **Tom Teodorczuk**, spoke to **Dr Patricia McCarney**, President and CEO of the World Council on City Data (WCCD), Director of the Global Cities Institute and Professor of Political Science at the University of Toronto

Can you tell me more about ISO 37120 and how the World Council on City Data (WCCD) came to lead its global implementation?

ISO 37120 is the first international standard for cities and it's the first time that ISO has ever had a standard dedicated to city data. ISO has standards for automobile parts and light bulbs for cellphone components and so on, but cities have not been part of the ISO work in the past. In 2012, we approached ISO in Geneva and advised them that we had been developing a set of indicators for cities since 2006, developing standardised definitions and methodologies. At that time we had built the Global City Indicators Facility (GCIF) at the University of Toronto, working with the World Bank that had identified the serious gap in data for cities and the need to develop a common language for cities. Once you have standardised data for cities, cities can talk to each other and learn from each other. As part of our platform, we now position data as the universal language for cities.

Can you talk about the process of establishing ISO 37120?

It took my colleagues and I at WCCD two years to guide the passage of ISO 37120 through to publication inside the ISO. Cities helped to develop the indicators themselves and countries voted on a series of drafts during the ISO process. We reached consensus on 100 indicators with standardised definitions and standardised methodologies. These were reviewed and vetted over the two years. It went through several revisions with hundreds of comments from voting country members through the ISO process. ISO 37120 was published in May



Patricia McCarney, President and CEO of the World Council on City Data

2014 and introduced at the Global Cities Summit in Toronto at that time.

The Global City Institute served as an advocate for the Sustainable Development Goals (SDGs) which the UN member states adopted last September, one of which—Goal 11—directly addressed cities. What are the biggest challenges for the SDGs going forward?

Now that Goal 11 has been included as part of the SDGs, the biggest challenges right now for successful implementation of the SDGs is how cities and nations will create and define Goal 11 and the other urban-related goals of the SDGs, such as clean water and sanitation [Goal 6], resilient infrastructure [Goal 9], and combatting climate change [Goal 13]. Cities and

nations need to work together to define the targets and more specifically determine indicators for data that will support measurement in informing movement towards the SDG targets. In the past, data for cities has been quite weak and cities weren't represented so that's why the SDGs are so important and that's where the WCCD and ISO 37120 comes in. In the case of the Millennium Development Goals (MDGs), cities' voices just hadn't come together well enough. The population for people living in cities will increase to approximately 5 billion in 2030 so those kinds of numbers are driving the addition of Goal 11 in the SDGs.

We have to pay attention to the very large cities. The largest city right now, if you take proper city boundaries, is

Karachi with over 15 million people. But if you measure by urban areas, Tokyo is considered the largest city in the world with some 35 million people. That's the size of a country! So you really do need not only countries to adopt the SDGs but for cities to collaborate more closely.

How will ISO 37120 and the SDGs ensure global priorities are more closely met?

High-calibre data allows cities and countries to manage progress in not only reaching Goal 11 targets, but also to evaluate investment in infrastructure and investment in poverty alleviation, to evaluate water consumption in cities and provide access to safe and sustainable transport systems. For example, Goal 11.6 of the SDGs is measuring air quality and

improving waste management. These are both sound metrics in the WCCD's work with cities in reporting under ISO 37120 indicators. Also, through the standard we're monitoring cities' greenhouse gas emissions under the global protocol for communities so aptly developed by ICLEI and other partners of the WCCD. More countries are adopting ISO 37120 and will therefore be in place at the national level to assist countries and their cities to better measure progress towards SDG 11 and other urban related SDGs.

The administrative and management structure of WCCD strikes me as unique. Was it intentional to have this as your unique selling point?

Yes I agree and yes it was intentional. In 2006 and 2007 when we were first

thinking about working this through, we looked at many indicators and programmes throughout the world. So many indicators programmes fail as they are not in line with city needs and priorities. Perhaps what made us different is what we might term a Canadian way of operating! Instead of just setting something up globally and trying to implement it locally, we actually asked the cities what they wanted to measure and what they were already measuring. We went to cities and asked: 'What are your priorities and why are you measuring this and not this?' We made sure it was useful to cities and resonated with what cities were already measuring.

The other thing that distinguished us was testing KPIs [key performance indicators] with a pilot group of cities that spanned both developing and developed country cities to determine a more global set of indicators. We then started rolling it out and by 2012 we had a remarkable network of 255 cities across 83 countries working and refining this standardised set of indicators.

So it was asking cities, testing it around a global set of cities and building

“Instead of just setting something up globally and trying to implement it locally, we actually asked the cities what they wanted to measure and what they were already measuring”



More than 100 cities will convene in Dubai for the WCCD Global Cities Summit where new thematic reports on mobility, infrastructure and investment will be released

high-quality data. Our slogan therefore, 'Built by cities, for cities' stems from this decade of history in working with cities across the globe and guides our work today.

How do you take into account the differentiations that exist in each country?

Even to measure population across cities is very difficult because of different boundaries and different definitions of city administrations. To measure something as simple as the number of firefighters per hundred thousand, the definitions were uneven. So some cities measuring firefighters include all the volunteer firefighters while other cities only include the firefighters on the payroll. So we evened out the definitions and methodologies and we ended up with an ISO standard with 100 indicators. Those are across 17 themes. Cities can group themselves into peer groups for global comparative frameworks so that cities in Africa might only want to compare their data with other cities in their region or income group. Cities in North America might want to only compare themselves with peer cities in their same demographic size range. Depending on the theme (for example climate change) cities might prefer to group themselves into a similar peer group by climate type. The WCCD platform is designed to help with differentiation according to a city's choice.

How effective do you think cities have historically been at using data?

At the national level we have pretty good stats in place. But at the city level in many countries, it has been quite weak until the last few years. Today, the first 20 global cities have been certified against ISO 37120 and part of the Global Cities Registry of the WCCD. This data is already posted on an open data platform built by the WCCD www.dataforcities.org. As cities start to conform to the ISO standard, we're going to have incredible data for the first time. We are now welcoming the next 100 cities to the WCCD and rolling it out.

We invited 20 of the leading cities to test this over the past year from North America, Latin America, the Middle East, Asia, Africa and Europe. Now we're opening it to all cities and the first

cities will convene in Dubai in 2016. The United Arab Emirates, under the leadership of the Executive Council of Dubai, has invited the first cities certified under ISO 37120 to a WCCD Global Cities Summit in Dubai to talk about data and how city data for the first time can start to inform innovation and learning.

What outcomes are you hoping for at the Dubai summit?

We're hoping to have a really strong set of thematic reports that will be launched at that event. For example, there will be one on cities and mobility focusing on data analytics and index formation. A second one we are looking at is on urban infrastructure and a multi-governance

Cities Agenda—that drives investment in infrastructure whether it's water or sanitation for lower income cities or smart transit in higher income cities. Large companies get involved—for instance smart lighting in the case of Philips looking at Smart Cities in India or smart transit that Siemens is looking at in North America and Europe. Countries are partnering with us right now in part because data for cities hasn't existed before.

What role does technology play in what the WCCD does?

We launched the WCCD open data web portal in Los Angeles at the beginning of the LA Tech fest last summer—dataforcities.org. A citizen can go on to the



Justin Trudeau (L) Prime Minister of Canada and his Australian counterpart, Malcolm Turnbull (R), have received praise from the WCCD for their new cabinets that give a greater importance to cities

investment framework informed by comparative city data. We're looking at a panel on finance and at a panel on safety in cities. So the first release of these analytics and reports will be in Dubai.

Why do you think the Dubai summit will be particularly impactful?

It's going to be impactful for two reasons. One is on the front of innovation but secondly as the cities have good, comparable data to share with other peer cities—like India or China with their Smart

portal and ask questions like 'How healthy is my city?' 'How clean is my air?' or 'How safe is my city?' Open data in cities is driving all kinds of hackathons and apps. When Boris Johnson, Mayor of London, opened the data on transit in London, citizens were creating transit apps within the first two weeks of the open portal.

What is your perspective on the rise of smart cities?

It's early days. When the term 'smart cities' first arose, it was really around ICT. It was

all technical and about the digital world but smart cities in India and China are helping to re-inform the concept along broader lines to include basic services like water or sanitation and how to improve delivery with more effective technologies in their poorest communities. We've been to India, to meet with cities, research think tanks and the National Ministry of Urban Development and we are in the process of establishing partnerships with Indian cities to explore our WCCD data for cities agenda. The timing to build and compile data for Indian cities is significant, not only to help inform the smart cities targets, but more generally to help ensure sound investment and data-driven policy to guide this exciting agenda for cities being introduced by Prime Minister Modi.

What do you see are the most effective ways to increase civic engagement in cities and make citizens better informed?

I come back to data. I do believe that we have constructed the open data portal in such a way that because the data is certified and open and it's really good data we want citizens to go on and ask those kinds of questions. For example we would love high school students to do a project on 'How safe is my city?' and have access to the data that they can write papers on. University and academic research and innovation can be powered by the open data platform. I believe that if you have good data, you're going to have very well informed citizens and this builds better government, higher transparency and improved quality of life in cities.

Mayors and city managers are also empowered by good data because it helps them build the case for better investments in transit and other infrastructure because they have comparable data from other cities to build the case. Open data for cities and this portal we've been constructing can help move that whole agenda forward.

What else would you like to see happen in 2016?

Our big hope after COP21 is to have really solid GHG emission data, for instance, and to have mobility data on

automobiles and modal split that will develop thinking about lowering carbon in cities across the mobility sector. Those are the kinds of things that we will start to look for in putting the data out in very usable ways for cities to think about in terms of the SDGs. The WCCD has signed agreements with the United Nations Environment Programme (UNEP) and the United Nations International Strategy for Disaster Risk Reduction (UNISDR). The UNISDR is an organisation devoted to resilience and disaster risk reduction and we will be working with UNISDR, UNEP and other partners to help to develop the new ISO standard on resilient cities. We are also now developing a new standard on

I believe that if you have good data, you're going to have very well informed citizens and this builds better government, higher transparency and improved quality of life in cities

indicators for smart cities within the ISO. This ISO 'family of city standards' is high on our agenda for 2016. Implementing ISO 37120 in cities worldwide is a central part of our 2016 work programme here at the WCCD.

It seems that the importance of effective deployment of data by cities is an argument that grows stronger every year?

Yes and what we see happening is that national governments are a large part of this rising importance of data for cities. This is new. Cities were not always seen as a policy priority by national governments, but the recognition of cities driving national economic growth and the need to devote investment to city building to support this is a rising agenda in countries across the globe.

Here in Canada, cities were not on the radar of the last government. But the new government in Canada, headed by Prime Minister Trudeau, has committed to massive infrastructure investment for cities because they understand the importance of cities to their economic development trajectory for the next ten to fifteen years. Getting it right in cities depends on good city-level data. The timing couldn't be better. We're seeing this understanding emerging in India, in South Africa, in Brazil and across the US under the dynamic leadership of former Mayor Castro from San Antonio, Texas, who is leading major national investments in cities today under President Obama's administration. Under the Turnbull Government in Australia, there is a new Minister for Cities. Melbourne is a member of WCCD and we hope to see Brisbane and other cities help drive a data-driven agenda with the new Ministry of Cities.

Is it still the plan for WCCD to establish more regional offices?

Yes but in cautious steps. We are considering location and timing as we grow. We now have an office in Beijing in the Smart City Innovation Lab part of the Ministry of Housing and Urban-Rural Development (MOHURD). China is one of the countries adopting ISO 37120. We are also considering offices in other regions where the interest and take-up is particularly rapid.

What are your future ambitions for WCCD?

Our ultimate hope is to build a very robust database on cities with the WCCD portal becoming more and more populated by data from hundreds of cities worldwide. Imagine the incredible database that we could have, open to mayors, city managers and citizens alike, to UN partners and corporate partners, and to nations driving investment in cities. As cities are increasingly ISO 37120 certified, it becomes easier for countries to measure success in terms of the SDG targets. I hope the SDGs would help to propel better data for cities through ISO 37120 and be a foundation for expansion of the open data portal of the WCCD. ■

UNITED KINGDOM

Mayor praises top London businesses reducing energy usage

A supermarket giant, top-ranking Premier League football team and the world's first carbon-neutral theatre have won awards in this year's Business Energy Challenge, a competition run by the Mayor of London to encourage businesses to slash their energy usage. The 110 London businesses that entered the competition delivered a collective 188,000 tonnes in CO₂ emission reductions, by reducing their energy usage by an amount that would be enough to power over 24,000 homes. Ten London businesses won the gold award for achieving the highest carbon energy intensity, including Arsenal Football Club's ground, the Emirates Stadium. Arsenal made a series of energy-friendly upgrades across their ground, office block and youth academy including installing light sensors and updating a computer-based management system, which controls and monitors mechanical and electrical equipment.

INTERNATIONAL

New trends developed at lighting design convention

The fifth edition of the Professional Lighting Design Convention in Rome, PLDC 2015, endorsed the importance of the biennial convention for the international lighting design community. At the event, lighting designers, architects, end-users, researchers, educators and other representatives from the lighting profession discussed the quality of light in architecture, to discover and develop trends, and discuss the future of the lighting design profession. Joachim Ritter, Chair of the PLDC Steering Committee, said: "We are delighted that our ideas and efforts have been met with such a positive response, and that the modern format we have developed for PLDC has gained so much recognition worldwide. The market is very dynamic right now and lighting design is gaining more attention."

AFRICA

Africa Renewable Energy Initiative receives US\$10 billion in funding

The Africa Renewable Energy Initiative is to receive US\$10 billion worth of financing from the European Union, Sweden and the G7. The project, which is led by the African Union, New Partnership for Africa's Development, African Group of Negotiators, African Development Bank, UN Environment Programme, and International Renewable Energy Agency, aims to add 10,000 megawatts of additional renewable energy on the continent by 2020. The Africa Renewable Energy Initiative aims to help achieve sustainable development by guaranteeing universal access to clean and affordable energy. Now in its second phase, the initiative is targeting the mobilisation of Africa's renewable resources, such as solar, geothermal and wind, to generate 300 GW of energy by 2030, more than doubling capacity.

UNITED KINGDOM

West London Alliance wins energy efficiency award

Claude Turmes, European MP and Werner Hoyer, President of the European Investment Bank (EIB), hailed the achievement of the West London Alliance of six local government councils at the annual European Energy Service Awards (EESA). The awards are part of the European Commission's drive towards achieving the EU2020 Energy Saving Targets.

At the presentation, Member of European Parliament, Claude Turmes highlighted the importance of increased energy efficiency in buildings as a key factor in the EU's efforts towards achieving its climate change targets.

"The European Union has set up the legal framework," said Turmes. "Now it is up to member states to reduce energy consumption of its public and private buildings by implementing renovation roadmaps or models like Energy Performance Contracting."



The winners at the European Energy Service Awards

The West London Alliance set up its Energy Efficiency Programme two years ago and won the Best Energy Project award for a joint procurement initiative, which achieved significant cost and carbon dioxide savings in 21 government buildings across the Barnet, Brent, Ealing, Harrow, Hammersmith & Fulham and Hounslow boroughs.

The EIB supported the event for the first time and its President, Werner Hoyer, used his opening address to highlight the work of the Bank and the European Fund for Strategic Investments as a tool for bringing public and private finance together.

"Public funds alone are insufficient, and it is clear that the vast majority of climate-related financing will have to come from the private sector," said Hoyer.

The EIB's board of directors recently endorsed a new strategy that will allow it to commit at least 25 percent of its lending towards climate action.

"In fact, in the margins of the World Bank and IMF Annual Meetings I announced to finance ministers and other multilateral financial institutions that the EIB will provide financing of more than €100 billion over the next five years for climate-related investments," added Hoyer.



Photo: CEPPi

Visitors to the new CEPPi website can learn more about the five cities' sustainable and innovation procurement policies and actions

INTERNATIONAL

New website launched to showcase sustainable energy solutions

The EU-funded CEPPi (Coordinated energy-related PPIs actions for cities) project website has been launched to showcase the sustainable energy solutions of the five participating cities, Birmingham (UK), Budapest (Hungary), Castelló and Valencia (Spain), and Wrocław (Poland).

“Each participating city has a profile page that will be frequently updated with pro-innovation procurements implemented and other accomplishments within CEPPi that contribute to achieving our goals,” Jacqueline Homan, Head of Sustainability, Birmingham City Council, told *Cities Today*.

This three-year project aims to build capacity related to public procurement of innovation (PPI) and sustainable public procurement (SPP) in cities. Public procurement has the power to foster innovation and shape it to meet the needs and challenges of public services. By using a pro-innovation procurement approach, the cities aim to achieve energy savings of 33GWh per year.

Public authorities have started identifying the possible areas of intervention and related information has been published on the CEPPi website. Birmingham City Council announced its interest in procurements related to its waste strategy, and refrigeration units for markets; Budapest is exploring the implementation of PPI practices in tenders to retrofit the City Hall; Valencia is looking at city lighting, fountain systems and sports centres; and Wrocław is considering a focus on street lighting modernisation. Castelló is currently assessing opportunities. CEPPi cities aspire to adopt a leadership role in their regions.

“Since the start of the project, substantial progress has been made,” added Homan. “Cities have made an assessment of their energy opportunities and undertaken a PPI GAP Analysis. Expert partners in CEPPi have been able to use this data to help the cities identify procurement opportunities. Now cities are internally evaluating the possibilities and working with the relevant departments to take the next steps.”

The project is coordinated by Birmingham City Council, in partnership with Budapest City Council, the Municipality of Castelló, InnDEAValencia, EIT+, JERA Consulting, Optimat, Steinbeis-Transferzentrum EGS, and ICLEI – Local Governments for Sustainability.

UNITED ARAB EMIRATES

Abu Dhabi bank to provide US\$10 billion of finance for renewables

The National Bank of Abu Dhabi has made a US\$10 billion, 10-year pledge to finance renewable energy and other sustainable business activities. The bank will lend, invest and facilitate US\$10 billion of financing in environmentally sustainable projects in the West-East corridor, which stretches from Africa, through the Middle East to Asia. Last year the bank published a report with Cambridge University and consultancy PwC, *Financing the Future of Energy*, which identified a US\$48 trillion funding gap over the next 20 years to meet global energy demand. “We believe that even in the current climate of low oil prices, the transition towards more renewable sources in the energy mix will continue because the underlying drivers are long-term and strong,” said Alex Thursby, CEO of the National Bank of Abu Dhabi.

AUSTRALIA

Sydney businesses make huge savings by cutting emissions

Clover Moore, Lord Mayor of Sydney, has announced that city's top commercial landlords have cut 45 percent of their emissions since 2006, saving US\$21 million a year. The Sydney-led Better Buildings Partnership includes the major landlords and property managers of more than half of the city centre's commercial office floor space. Members of the Better Buildings Partnership have improved the overall sustainability performance of their buildings through measures such as building system upgrades, improved facilities management and green infrastructure including locally produced tri-generation, low carbon energy and recycled water networks. Over half of Sydney's greenhouse gas emissions come from commercial office buildings, highlighting the importance of reducing their overall environmental impact.

INTERNATIONAL

Clean energy attracted record global investment in 2015

Clean energy investment surged in China, Africa, the US, Latin America and India in 2015, driving the world total to its highest ever figure, of US\$329.3 billion, up 4 percent from 2014's revised US\$315.9 billion and beating the previous record, set in 2011 by 3 percent. The latest figures from Bloomberg New Energy Finance show dollar investment globally growing in 2015 to nearly six times its 2004 total and a new record of one third of US\$1 trillion, despite four influences that might have been expected to restrain it. Last year was also the highest ever for installation of renewable power capacity, with 64 GW of wind and 57 GW of solar PV commissioned, an increase of nearly 30 percent over 2014.

ITALY

Milan recognised for reducing pollution

Milan won first prize in the category of innovation during the EUROCITIES annual conference. The city won for its work in tackling the high level of private car ownership and improving local air quality. Made up of three phases, including the flagship Area C congestion zone, which has helped reduce traffic in the city centre by nearly 30 percent, Milan also operates a successful bike and car-sharing scheme, with scooters soon to be added. "It was not easy to implement this plan, even though it was clear in the minds of the people who conceived it, it was difficult to convey it to people as it demanded a change in their everyday habits," said Marta Mancini, Chief Officer, International Relations, Milan City Council. "But we are very happy that this has happened and we can still improve on this."

INTERNATIONAL

C40 and Novo Nordisk partner to show benefits of green policies

The C40 Cities Climate Leadership Group (C40) has teamed up with global health care company Novo Nordisk to establish an evidence base aimed at helping mayors push through climate change projects. C40 will draw on Novo Nordisk's research teams to flesh out green policies, which have benefits for the environment and the health of citizens. Mexico City was highlighted as an example of the sort of evidence the partnership will be delivering. Once the most polluted city on the planet, a monitoring network was introduced to measure air quality, alongside new policies, which have led to a reduction in pollutants. The project is now recognised as one of the most successful and long-lasting health protection programmes in Mexico.

ITALY

Milan reaps benefits of millions spent on disabled access

The European Union has rewarded the Italian city of Milan with the Access City Award for 2016, which recognises the efforts the city has gone towards making it more accessible for people with disabilities. The award is the culmination of five years of hard work that Milan has undertaken since adopting the United Nations Convention on the Rights of Persons with Disabilities in 2011 and implementing a comprehensive strategy to improve accessibility. Milan has spent €25 million on accessibility projects with another €25 million earmarked for new projects. The city has also budgeted €43 million of annual spending for services and benefits to people with disabilities. The judges welcomed Milan's commitment to promoting the employment of disabled people and its support for independent living.

INTERNATIONAL

Over 100 cities sign global food pact

One hundred and seventeen cities have signed the Milan Urban Food Policy Pact, the first covenant from the Mayors on Urban Food Policies, that establishes a network of cities to work on sustainable food policies, sharing of ideas and suggestions.

"Today, in the presence of metropolises from all over the world that are home to 400 million people, we have achieved an ambitious goal: a commitment for the implementation of smart food policies in our cities," said Giuliano Pisapia, Mayor of Milan. "This strong commitment entails concrete actions at the local level, aimed at facing global emergencies such as hunger, malnutrition and 1.3 million tonnes of food wasted every year."

The pact is recognised as the first international protocol through which mayors commit to develop sustainable food systems to grant healthy and accessible food to all, protect biodiversity and fight against food waste.

"I am sure that synergies among cities can get results when states can't achieve goals," added Pisapia. "This is the reason why last year at the C40 Summit in Johannesburg, I proposed an international pact on food policies to other mayors. The response has been outstanding. We have worked hard and today a dream has come true. This is the beginning of a new challenge. Our cities can become an important example of equal and sustainable development."



Giuliano Pisapia, Mayor of Milan signed the protocol via a tablet

Ada Colau, Mayor of Barcelona, spoke about her city's good practice: "We put effort into fighting food inequality. Municipalities can approve policies that guarantee food access to all their citizens. We are proud of our 39 covered markets: they are ecological places, where people can buy their groceries. They have become an important part of our city's economy."

The pact includes the commitment to develop and implement policies that promote fair, sustainable and resilient food systems and a framework of action that focuses on six different areas of intervention. These include governance, sustainable diets, social and economic justice, production, distribution, and waste.

Signatory cities propose to meet regularly in order to discuss the adopted measures. An award for the city that achieves the best results will be also established. On the occasion of World Food Day, Pisapia presented the pact to the Secretary-General of the UN, Ban Ki-moon.



In Tianjin, people with diabetes reported a wide range of causes of the condition including poor food choices, overworking and poor mental health

INTERNATIONAL

New research links urban lifestyle to rise of diabetes

A new study reveals that social and cultural factors, including time pressure, commuting time and where you live are playing a bigger part in the rise of diabetes in cities than previously thought.

University College London (UCL) conducted the study in five cities. Deemed to be the world's largest ever study of urban diabetes it suggests that cities must reconsider public health and city planning strategies to address the rise of the condition. Over 400 million people worldwide have diabetes, more than two thirds of whom live in cities.

“By largely focusing on biomedical risk factors for diabetes, traditional research has not adequately accounted for the impact of social and cultural drivers of disease,” David Napier, Professor of Medical Anthropology, UCL, told *Cities Today*. “Our pioneering research will enable cities worldwide to help populations adapt to lifestyles that make them less vulnerable to diabetes.”

The study was compiled for the Cities Changing Diabetes international summit held in Copenhagen where it was announced that this year, Vancouver and Johannesburg will join Mexico City, Shanghai, Tianjin, Copenhagen, and Houston as partner cities.

Prompted by the findings, Danish pharmaceutical company, Novo Nordisk, a partner of the network, has pledged to support the fight against urban diabetes via an investment of US\$20 million.

“Approximately half of the amount will be invested in new research to complement the work already done in the mapping phase of the partnership,” said Jakob Riis, Executive Vice President, China, Pacific & Marketing, Novo Nordisk. “The remainder will be committed to providing Novo Nordisk expertise to enable new partnerships with cities and stakeholders; to increase awareness of the challenge and to share best practice between cities around the world.”

Some of the key findings from the study reveal that in Houston, the traditional notion of disadvantage being equal to vulnerability is no longer the rule and both people with and without financial constraints may be vulnerable to diabetes. In Mexico City, gender roles may contribute to increased vulnerability as women neglect their own health to avoid being seen as burdensome. And in Copenhagen, it was found that diabetes is often not highest in a person's hierarchy of need, given many other social and health issues such as unemployment, financial difficulties and loneliness.

UNITED STATES

San Francisco links mental health with parks

A partnership between San Francisco doctors and the city's Recreation and Parks Department aims to help people with mental illness and overweight patients. Together with Healthy Parks, Healthy People Bay Area, a collaborative effort between 25 local agencies, SF Rec and Park Department provides professional guides that provide a short interpretive programme designed specifically for each location. Staff carry first aid equipment and are certified in CPR. Physicians involved can prescribe patients a walk in the park three times a week, for instance. Organisers say that not only do they improve health but create better connections between residents, the city's parks and offers an opportunity to socialise.

AUSTRALIA

Melbourne declares smoke-free zones

Roaming street performers got onto their soapboxes as part of a creative campaign to remind smokers to butt out in declared smoke-free areas in the City of Melbourne. Lord Mayor Robert Doyle said Speakers' Corner performers spread the smoke-free message through comic poems, songs and improvisation at declared smoke-free locations in the central city. “We've introduced six smoke-free areas over the past 12 months, ranging from narrow laneways to large shopping precincts,” Doyle said. “Our research has shown that 75 percent of people don't realise that these smoke-free areas exist so we are launching an education campaign to inform the public and encourage them to visit these areas where they can breathe easy.” Last year the city council approved smoking bans in three popular city meeting places: permanent bans in QV Melbourne and Goldsbrough Lane and a daytime ban in City Square.

SINGAPORE

Dengue Fever set to rise in 2016

While fewer cases of Dengue Fever were reported in 2015 than in the last two years, the National Environment Agency (NEA) has warned that 2016 could see an increase. The concern comes after high numbers of cases were reported in what is usually the low season, an increase in the Aedes mosquito population, and a change in the dominant viral strain. More than 11,200 people were diagnosed with dengue last year with four dying as a result. In one area alone of the city-state, NEA officers found a total of 86 breeding sites with 60 in homes, and one in a construction site.

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UNITED STATES

Illinois Housing provides US\$1.1 billion for affordable housing

Illinois Housing Development Authority (IHDA) provided US\$1.1 billion for affordable housing and served more than 11,400 families in 2015, partnering with hundreds of lenders, developers and community development organisations to help low- and moderate-income households purchase or refinance a home, or find an affordable apartment. Through a network of 180 participating community lenders, US\$856 million in loans and down payment assistance were made to 7,000 borrowers who purchased or refinanced a home using IHDA's @HomeIllinois and 1stHomeIllinois programmes, making 2015 the second-most productive year in IHDA's 30 plus years of mortgage lending. For affordable and mixed-income rental housing, IHDA provided US\$260 million in loans and grants and tax credits.

INTERNATIONAL

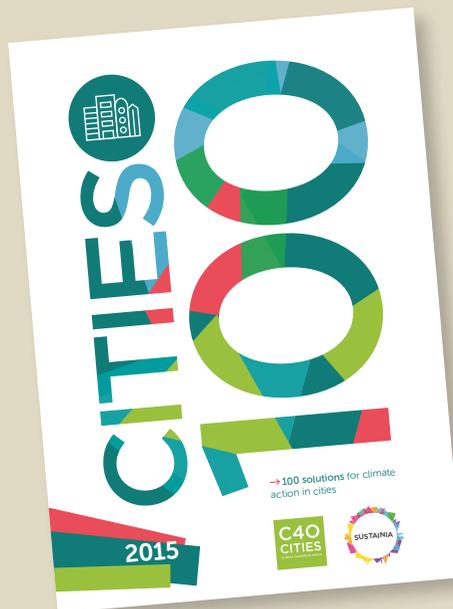
Affordable housing market growing in BRIC countries

The affordable housing market in BRIC (Brazil, Russia, India and China) countries is forecast to grow at a CAGR (Compound Annual Growth Rate) of 7.22 percent during the period 2016-2020, according to a new report released by Technavio, a technology research and advisory company. Entitled, *Affordable Housing Market in BRIC Countries 2016-2020*, the report was prepared based on an in-depth market analysis with inputs from industry experts. To calculate the market size, analysts considered the expected demand for new units across BRIC countries during the forecast period. The BRIC countries have a large and growing middle-class population with increasing disposable incomes. Affordable housing provides the middle and low-income population with the opportunity to own independent houses.

UNITED KINGDOM

Report promotes new model to revitalise Britain's high streets

The Town Centre Investment Zones report, which was launched by a group of property industry experts, demonstrates that asset management of the high street could unlock much-needed investment for British local authorities and communities to transform their areas. Having identified that fragmented ownership and poor asset management are overriding factors in the high street's inability to adapt to change, the group used three town centres as pilot studies to show that by taking a more structured approach to a high street's offering, investment can be attracted and bring about fundamental change. The report suggests that Town Centre Investment Management (TCIM), which involves the pooling of a critical mass of property assets into an investment vehicle, will allow the assets to be managed and curated, rejuvenating the high street.



The *Cities100* publication illustrates that cities can and do take meaningful action at the local level

Photo: C40

INTERNATIONAL

C40 launches *Cities100* publication

C40 Cities, in partnership with Sustainia and Realdania, have launched the *Cities100* publication, which features 100 leading policy solutions from cities around the world and serves as a guide to civic leaders and urban planners seeking to create resilient and productive cities.

“Sustainia, C40, and Realdania combined our shared passions for sustainable solutions and local action to produce this comprehensive look at city-based climate change solutions from all over the world,” said Esben Alslund Lanthén, Editor of *Cities100* and Analyst at Sustainia. “We arrived at the 100-featured solutions in *Cities100* after a rigorous assessment process in which all 216 applications were scored numerically on strict evaluation criteria, such as innovation and scalability. From there, all applications were individually vetted by a committee of expert advisors to provide nuance and perspective.”

Cities100 aims to highlight how city leaders are not waiting for national level changes. Instead, they are leading the charge against climate change by implementing local solutions to global problems.

Cities have always been centres of commerce, culture, and knowledge. Now they are harnessing their innovative, collaborative, and progressive nature to take action on climate change, forging a path to a low-carbon future that improves the health, wellbeing, and economic opportunities of urban citizens.

“COP21 was a key moment, not least because it enshrined a new approach to global action on climate change in which cities and non-state actors have a major role to play,” Mark Watts, Executive Director, C40 Cities, told *Cities Today*. “While C40’s latest research shows just how much mayors have achieved already, there is no question that barriers remain which limit city governments’ ability to deliver to their full potential. The most significant of these are access to finance and a need for greater governmental co-ordination.”

One of the leading examples taken from the *Cities100* report comes from Johannesburg, which is issuing green bonds to finance climate mitigation projects worth more than US\$143 million, enabling them to accelerate the roll out of 42,000 building smart meters, 43,000 solar water heaters and deployment of 152 hybrid buses.

UNITED STATES

San Francisco to invest US\$8.8 million in affordable housing

San Francisco will be granted US\$8.8 million to help fund two affordable housing projects in the Tenderloin and South of Market neighbourhood. Using proceeds from its cap-and-trade auction, the state will provide US\$2.3 million for the Tenderloin Neighborhood Development Corporation Eddy and Taylor Family Housing project, which will develop 103 affordable housing units, and US\$6.5 million for the Mercy Housing 222 Beale Street project that will provide 120 affordable residential units.

“This nearly US\$9 million investment in affordable housing in San Francisco is an investment in our city’s low-income families and residents,” said Edwin Lee, Mayor of San Francisco. “This partnership and investment will help us build more affordable housing for low-income San Franciscans, as well as strengthen our neighbourhoods. At the same time, it will help California meet its climate action goals.”



Edwin Lee, Mayor of San Francisco

The funding award comes from the California Strategic Growth Council’s Affordable Housing and Sustainable Communities Program Fall 2015 Funding Round.

“We know this is a challenging time for our city with a housing crisis decades in the making that demands our continued and determined leadership,” added Lee. “These new affordable homes will help us meet our goal of building, rehabilitating, and preserving 30,000 homes by 2020, with more than half affordable to our city’s struggling low and middle-income residents.”

The affordable housing funding closely followed Lee’s announcement that a goal for his second term was to help at least 8,000 people out of homelessness through strategies that stabilise people’s lives through the city’s housing and services programmes by building a system that ends a person’s homelessness before it becomes chronic.

The mayor is creating a new department to help homeless residents permanently exit the streets and move into housing and services, and has committed to maintaining and enhancing funding for homeless prevention and solutions of at least US\$250 million per year.

GERMANY

Berlin to test radar-based parking space detection

Siemens has launched a pilot project in Berlin aimed at simplifying the search for a parking space. The company has installed radar sensors on street lamps, for test and demonstration purposes, that provide information on parking space occupancy. The network of sensors scans from above an area of up to 30 metres, the equivalent of five to eight parking spaces. The test results should prove that by reducing parking search traffic the system is suitable for cutting CO₂ emissions. Street lamps on a 200-metre-long section of road have been fitted with radar sensors that continuously monitor urban parking areas and report free parking spaces and the number of occupied e-parking spots to parking space management software.

UNITED STATES

New York to create 15,000 units of supportive housing

Bill de Blasio, Mayor of New York, has announced the formation of a Supportive Housing Task Force to help the city implement its plan to create 15,000 units of supportive housing. Supportive housing is affordable permanent housing with services, including case management, mental health and substance use disorder services, access to medical care, and other social and supportive services. “The creation of 15,000 supportive apartments means giving 15,000 individuals the best possible opportunity to overcome deep challenges like mental illness, homelessness and substance misuse,” said de Blasio. “It means thousands of people off the street, out of shelter, away from the revolving door of the criminal justice system and emergency rooms.”

INTERNATIONAL

C40 launches ad campaign to highlight climate action in megacities

The C40 Cities Climate Leadership Group (C40) has debuted its first ad for #CitiesAreKey, a global pro bono advertising campaign designed to emphasise the leadership role mayors and urban citizens are playing to tackle climate change. To kick off the campaign, a 30-second animated video was broadcast on Clear Channel Outdoor’s (CCO) Piccadilly One digital billboard site in London’s Piccadilly Circus, which reaches an estimated two million people every week. The video showcases the 10,000 climate actions that C40 cities are taking, such as creating bike lanes and planting trees, which directly impact and benefit urban citizens by making cities more liveable. “Outdoor advertising has long formed the fabric of urban environments, but thanks to digital and interactive technology, it now provides a vital communication channel that enables cities to better engage with its citizens and improve city life,” said William Eccleshare, Chairman and CEO of Clear Channel International.

ASIA AND PACIFIC

Asian cities need access to better data, says new report

UN-Habitat and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) unveiled their second report on the state of cities in the Asia and Pacific region before delegates gathered at the Sixth Asia and Pacific Urban Forum, which took place in Jakarta. Among the report's key findings are that the region faces an urban 'data deficit', undermining its ability to respond to the challenges with informed urban policy and planning interventions. Often data is collected by economic institutions, consultancies and the private sector and is not made available to local governments. The report argues that Asian and Pacific cities need an *urban data revolution* to be sufficiently informed to tackle the tasks at hand and ahead.

SINGAPORE

Singapore to pilot global smart cities index

The city-state has joined a two-year pilot project to evaluate the feasibility of the International Telecommunications Union's (ITU) key performance indicators for smart sustainable cities. The city-state will contribute to ITU's international standardisation of the indicators and the subsequent development of a 'Global Smart Sustainable Cities Index' derived from the set of indicators. The collaboration is part of ITU's efforts to encourage the adoption of master plans for sustainable urban development by city administrations. The key performance indicators focus on the elements of a smart city that rely on ICT, offering a measure of progress relevant to ICT aspects of urban development master plans.

UNITED STATES AND MEXICO

New tech alliance to deliver smart city solutions

US telecommunications company, AT&T, has launched a series of alliances with other technology companies aimed at providing Internet of Things solutions to cities, with Atlanta, Chicago and Dallas the first to benefit. Cisco, Deloitte, Ericsson, GE, IBM and Intel have partnered with AT&T to provide smart cities technology across countries where AT&T has a presence—primarily the US and Mexico. Ericsson's first contribution to the project is to deliver a connected water project to provide remote monitoring of water quality in city watersheds for the Chattahoochee Riverkeeper, which runs past Atlanta. Chicago has also benefited from the alliance, which is using Internet of Things technology for water system sensors, advanced analytics and energy efficiency projects.



Photo: Fira de Barcelona

Cécile Faraud (centre), Circular Economy Officer, Peterborough City Council and Poppy Rai (right), Innovation Project Officer, Peterborough DNA

UNITED KINGDOM

Peterborough wins global smart city award

The medium-sized UK city, Peterborough, has beaten larger competitors—including Moscow, Dubai and Buenos Aires—to be selected as this year's World Smart City, presented during the Smart City Expo World Congress held in Barcelona.

"It's a great recognition of our work but actually most importantly it shows that a medium-sized city that has the ambition and the guts can be visible and awarded globally," Cécile Faraud, Circular Economy Officer, Peterborough City Council told *Cities Today*. "It is a great signal to other similar sized cities worldwide, we have a voice, we are doing great things."

Delivered by economic development company, Opportunity Peterborough and Peterborough City Council, the Peterborough DNA Smart City programme focuses on growth, innovation, skills and sustainability with the goal of making Peterborough a better place to invest, work and live. The city is also one of four urban labs in which the projects of the UK Future City initiative are being developed. The city's long-term commitment, beginning in the 1990s, to become the environmental capital of the UK, along with the fact that it was the first city to apply circular economy strategies together with a model of citizen involvement in designing its urban transformation, convinced the award's jury of seven international experts.

"We tend to do things slightly different in Peterborough," added Faraud. "We are actually implementing the 'circular city' which is a new and different concept. When you look at a circular economy you have products, companies, policies and consumers. All of them actually sit in cities, so we want to integrate that and look at it all rather than looking at silos."

Other winners included the Hebei Digital Education Centre in China which won best project, and in the innovative initiative category the winner was Findeter, the Colombian Development Bank, for its Digital Diamond programme in the Caribbean and the Santanderes region. An honorary award was also presented to India for its Delhi-Mumbai industrial corridor.

The Smart City Expo World Congress, organised by Fira de Barcelona, brought together 500 cities from five continents, 465 exhibitors and over 400 speakers, making the 5th edition the largest ever. Istanbul will next play host for the regional edition in April 2016.

UNITED STATES

Thirteen more cities join Bloomberg data initiative

Bloomberg Philanthropies has announced a further 13 mid-sized cities to join its three-year programme to help mayors improve their use of data—for free.

Called What Works Cities—and launched in April last year—the US\$42 million initiative now numbers 21 cities. All receive free customised support and technical assistance from expert partners to review their current use of data and evidence, to understand where they are utilising best practices, and to identify areas for growth.

“Many cities for the first time have started making their data available to the public, and have launched performance management systems to track their progress toward strategic goals,” said Simone Brody, What Works Cities’ Executive Director. “We now know a lot about what’s most important to our cities, how they currently use data and what they are most eager to improve.”



Anchorage, Alaska, is among the 13 cities chosen to join the programme

One success story from the first intake of cities has been in Jackson, Mississippi. There the city government had never used data to make decisions about policy or funding priorities. The city’s youngest-ever mayor, 37-year-old Tony Yarber, came to office in 2014 with a commitment to make key decisions based on data and evidence. He passed the city’s first open data policy (also the first in Mississippi) and is now using data to set budget priorities and address public safety and blight in the city’s first Performance Management programme (JackStat).

Brody added that once the initiative ends, systems will be in place to further assist cities including a learning network and producing a benchmark standard on comparable data to help cities understand their performance relative to peers.

“Cities want to learn from each other and don’t often have the opportunity to do so,” she added. “They want to see what’s worked in similar cities and learn from it. Who better to help a mayor or city manager think about how to manage and track the performance of his or her affordable housing initiative than a leader from a peer city who recently implemented a similar programme?”

The 13 cities include; Anchorage, Alaska; Bellevue, Washington; Cambridge, Massachusetts; Denton, Texas; Denver, Colorado; Independence, Missouri; Las Vegas, Nevada; Lexington, Kentucky; Saint Paul, Minnesota; San Francisco, California; San Jose, California; Tacoma, Washington; and Waco, Texas. What Works Cities will admit a total of 100 cities on a rolling basis through 2017.

UNITED STATES

US\$50 million challenge to award smartest US city

The US Department of Transportation (DOT) is teaming up with Microsoft billionaire, Paul Allen, to award a combined US\$50 million to the smartest US mid-sized city. To win the DOT Smart City Challenge, cities must create an integrated model that involves data, technology and creativity to shape how goods and people are moved in the future. The US DOT will provide US\$40 million to the winning city. To claim the extra US\$10 million cities must work alongside Allen’s Vulcan company to implement the idea. Cities are invited to submit ideas that address or enhance community through innovation and data-driven platforms. Specifically, these innovations will connect people, vehicles, public transport, and infrastructure through ITS, sharing economy, and other technologies that improve the way Americans move. Five finalists will be announced in March 2016 to compete for the prize in June 2016.

UNITED KINGDOM

Smart benches unveiled in London

New solar powered benches that can recharge mobiles, tablets and portable music players have been unveiled in several locations in London’s financial hub, Canary Wharf. The four benches can also track air quality and noise levels and include an emergency call button. More sensors are expected to be added with each bench able to be custom built according to each buyer’s demands. Each bench can charge up to six devices via two built in cables, two USB ports, and two wireless chargers. Although not cheap, at £5,900 each, the benches have received awards including winning the ‘Connecting people and creating communities’ competition, organised by the Institute for Sustainability in partnership with the Mayor of London’s Office and supported by EIT Digital.

UNITED STATES

US city named as Siemen’s first living lab for traffic technology

Siemens has chosen Ann Arbor, in Michigan, US, as the company’s first Center of Excellence for Intelligent Traffic Technology. The global engineering company will provide Ann Arbor with its latest hardware and software technology to help expand the city’s smart traffic system infrastructure. Ann Arbor will be among the country’s first real-world implementations of the latest intelligent traffic technology. According to Siemens the partnership will allow the city to continue to modernise and enhance its transport systems through improved intelligence. The new technologies and partnership will allow the company and the city to gather new real-world data and insight into the impact of intelligent traffic technologies on congestion and safety.

INTERNATIONAL

Cubic Transportation Systems launch Urbanomics Mobility Project

Cubic Transportation Systems and its subsidiary Urban Insights have announced the development of the Urbanomics Mobility Project, a new data analysis platform to fuel smarter, more inclusive cities. Built in collaboration with MasterCard, the tool aims to help urban planners and commercial developers better understand the relationship between how people travel and what they buy to inform growth strategies and improve the quality of life for citizens of the world's cities. The initiative leverages Urban Insights' big data analytics and visualisation technology; Cubic's expertise in processing more than US\$24 billion per year in public transport revenue; and spending trends and insights derived from 43 billion transactions processed over the MasterCard network each year.

FRANCE

PTV Group and INRIX to provide real-time traffic data for Greater Paris Region

Ile-de-France Road Directorate (DiRIF) has announced the selection of PTV Group, a company that provides software and consultation on traffic and transport planning, to monitor traffic and congestion in real-time across the Greater Paris metropolitan area. DiRIF will use the company's PTV Optima analytics platform, which delivers traffic-related insight based on real-time data from INRIX, allowing the monitoring of traffic flow and gridlock across its road network more effectively than before. INRIX, a provider of real-time traffic information, will provide high-quality car data from its crowdsourced network of connected vehicles and devices for analysis. PTV Group integrates and processes this data to deliver DiRIF with a more accurate and comprehensive picture of the traffic situation on the region's roads at any given time.

EUROPE

'Driverless cars to be on European streets within five years', says EU Commissioner

Violeta Bulc, Commissioner for Transport, European Commission has predicted that driverless cars will be deployed in significant numbers in controlled environments within the next five years. "It is really exciting to see how quickly this technology is emerging," said Bulc. "The technology itself is almost ready, I am sure we are talking about a few years in controlled environments, for example, ports, airports and campuses." However, Bulc did note that concerns on safety, security and acceptance of the technology could delay the further take-up of autonomous vehicles in common city settings. "I am sure we will overcome these as well," she said. "However, it will take another few years to come up with the legislative framework. We also need to look at the depreciation cycles of infrastructure, which could be 10 to 15 years."

CHINA

Yichang wins 2016 Sustainable Transport Award

Yichang, the second largest city in China's Hubei Province, has won the 2016 Sustainable Transport Award. Yichang won the award ahead of finalists Moscow, Russia, and Rosario, Argentina. The Sustainable Transport Award (STA) is awarded annually by the Institute for Transportation and Development Policy to a city that has implemented innovative and sustainable transport projects.

The Chinese city has reformed its transport system by launching a successful bus rapid transit system (BRT), implementing parking improvements and introducing a new bike share scheme.

"Our policy is that green transportation and sustainable development is a key solution to solving traffic problems," Chuanqiang Mao, Vice Mayor of Yichang, told *Cities Today*. "We are encouraging non-motorised transport in the form of improving our BRT system, building our bike-sharing systems and prioritising buses."



Yichang has reformed its transport system by launching a successful bus rapid transit system

Yichang's BRT system, funded by a US\$150 million loan from the Asian Development Bank, has been a success since it opened last summer. Stretching 20 kilometres along one of the city's busiest roads, it is estimated that, of the 240,000 people who ride the buses each day, 20 percent previously drove a car or took a taxi.

Yichang's sustainable urban corridor has recently benefited from half of the parking spaces along the bus rapid transit route being eliminated and the remainder subject to improved management. The city also improved conditions for bicycles and pedestrians with 30 kilometres of bike lanes introduced and 700 trees planted together with 29 new safe pedestrian crossings.

"We were lucky because we learnt from the experiences and failures of previous BRT systems and benefited from good design," added Mao. "The government and citizens have supported us and that accounts for why, though we've only operated BRT for a short time, we have experienced success."

Chuanqiang Mao was presented with the award by Clayton Lane, CEO of the Institute for Transportation and Development Policy (ITDP) at a ceremony at the Walter E. Washington Convention Center in Washington DC.

UNITED KINGDOM

Glasgow completes new segregated cycle route

The City of Glasgow, Scotland, has completed work on a new £1.25 million segregated cycle route. The South-West City Way provides two kilometres of segregated cycle routes for cyclists travelling through the south side to the city centre, or vice versa.

“By providing a segregated route, cyclists have a safe and comfortable space on which to cycle on,” said Councillor Alistair Watson, Glasgow City Council’s Executive Member for Sustainability and Transport. “We know cycling is increasing across the city and having high quality infrastructure such as the segregated route, with attractions along the route like the Scotland Street School Museum and two local subway stations, will hopefully encourage even more people to get on their bikes and pedal their way to a healthier, fitter lifestyle.”

For the majority of the route a three-metre wide strip has been created for two-way cycling and is segregated from the traffic by a concrete island. The council worked with Cycling Scotland on the early design, with advice from the Dutch Embassy for Cycling, while McGeady Civil Engineering Ltd carried out the construction of the route.

For the first time in Glasgow, ‘floating’ bus stops have been used. At these locations, the cycle track travels past the rear of the bus shelter to avoid conflict between cyclists and pedestrians.



The launch of the new South-West City Way segregated cycle route

“The new ‘floating’ bus stop involves a cycle route running behind the passenger boarding area at the stop, between the physical island and the footway,” added Watson. “The advantages are that buses do not have to overtake cycles between stops, and people cycling do not have to negotiate out around stopped buses. In other words, there is no conflict between bus and cycle traffic.”

Another innovative creation and first for the city, is the introduction of a diagonal cycle crossing across West Street at Kingston Street. This allows cyclists to cross from one side of the junction to the other in one movement.

The programme has been funded by Glasgow City Council (£500,000), Sustrans, on behalf of Transport Scotland, (£500,000) and Strathclyde Partnership for Transport (£250,000).

INTERNATIONAL

More cities sign onto the C40 Clean Bus Declaration

With the recent addition of Changwon, Hong Kong and Los Angeles, 26 cities have now signed on to the C40 Clean Bus Declaration, demonstrating the market potential for new bus technologies to manufacturers. Signatory cities will have over 175,000 buses in their fleet by 2020, and have committed to switching over 45,000 of these to low emission. If the clean bus goals of these 26 cities are reached, greenhouse gas savings would be almost 1.3 million tonnes per year, and if the cities manage to switch their entire bus fleet to low emission, the savings could be 2.8 million tonnes each year. A C40 spokesperson said that transport is an opportunity area for reducing emissions; bus fleets in particular are owned/controlled by cities and are a great example of where cities can make a difference.

INDIA

Pune Rainbow BRT opens new section

Just months into operations, the Rainbow BRT in Pune and Pimpri-Chinchwad, is already moving 67,000 commuters per day and receiving widespread attention. The high ridership is proof of the comfort of the system, and surveys show that passengers find taking the bus very convenient. A new 8-kilometre, 14-station stretch of Rainbow BRT has opened in Pimpri-Chinchwad, broadening access to the network. The success of system has been highlighted with the award of “Outstanding Contribution to Sustainable Mobility” at the Volvo Sustainable Mobility Awards 2015. Since the launch of the first Rainbow BRT corridor in August 2015, thousands of commuters have enjoyed high quality bus rides and the ease of use that comes with the system’s closed stations with sliding doors, level boarding, informative displays and transit maps.

INTERNATIONAL

MasterCard and C40 announce a new partnership on mobility management

MasterCard and C40 have announced a new partnership on mobility management that will aim to better integrate and optimise different modes of public transport in cities. Urban transport is one of the key contributors to CO₂ emissions globally. Drawing on technology and expertise from MasterCard, the C40 Mobility Management network will spearhead the sharing and activation of best practices to better integrate and optimise the various modes of public transport available in a city. “If you think about the population in cities today, and that number doubling in the next 40 years, the infrastructure of most cities in the world are just not going to cope with that growth,” Hany Fam, President of MasterCard Enterprise Partnerships, told *Cities Today*.

INDIA

Kolkata to install 200 water ATMs

As part of the West Bengal government's packaged drinking water project, Pran Dhara, or water of life, 200 water vending machines will be set up across Kolkata. The first was opened for business at the end of 2015. Each litre of water is priced at 2 Indian rupees (US\$0.03). The state government hopes it will increase access to safe drinking water, and improve the quality of life for those living in urban slums and other disadvantaged areas.

UNITED KINGDOM

Thames Water removes 'fatberg' in time for Christmas

Thames Water engineers unwrapped a monster fatberg which had threatened to ruin Christmas on Leather Lane, Clerkenwell in London. The mass of congealed fat, grease and non-flushable items including wipes and nappies was discovered in the Holborn sewer before Christmas. Engineers worked extra shifts to keep the unwanted present under control—reducing it down each night to prevent customers suffering the misery of sewer flooding. Thames Water has removed more than 200,000 blockages from London's sewers in the last five years and says there is always an increase around Christmas, when many people put leftover animal fat down sinks and drains.

FIJI

Green Climate Fund to finance Suva's water needs

The Green Climate Fund (GCF) will strengthen the Fijian capital's resilience measures and at the same time boost clean water infrastructure and wastewater capacity through a US\$31 million grant. The US\$222 million project will be financed by the grant from GCF, a US\$67.7 million loan from Asian Development Bank, and other sources. The GCF grant will cover a third of the funds needed to ensure the water supply system is more resilient to anticipated climate change impacts. The water intake for the new system will be moved higher up the Rewa River to avoid saltwater intrusion from a rise in the sea level and to cope with likely shifts in river flows in the future. The water system will be climate-proofed through a number of measures including strengthening pipes to make them more resilient to flooding. By providing an alternative source of water for the greater Suva area the overall water network will also become stronger.



DC Water is the first utility to bring the technology to North America

UNITED STATES

DC Water turns sewage into electricity

Washington DC has unveiled its US\$470 million waste-to-energy project that produces a net 10 megawatts (MW) of electricity from the wastewater treatment process.

The project provides clean, renewable energy to power one-third of the Blue Plains plant's energy needs, and is the first utility provider to bring the technology to North America.

"This project embodies a shift from treating used water as waste to leveraging it as a resource," George Hawkins, CEO and General Manager, DC Water, told *Cities Today*. "We are proud to be the first to bring this innovation to North America for the benefit of our ratepayers, the industry and the environment."

The facilities include a de-watering building, 32 thermal hydrolysis vessels, four concrete 24-metre high anaerobic digesters that hold 14,000 cubic metres of solids each and three turbines the size of jet engines. The project was financed by bond issuance as part of DC Water's capital improvement programme.

The project, which broke ground in 2011, uses technology from CAMBI®. Blue Plains is now the largest thermal hydrolysis installation in the world.

Thermal hydrolysis uses high heat and pressure to 'pressure cook' the solids left over at the end of the wastewater treatment process. This weakens the solids' cell walls and the structure between cells to make the energy easily accessible to the organisms in the next stage of the process—anaerobic digestion. The methane these organisms produce is captured and fed to three large turbines to produce electricity. Steam is also captured and directed back into the process.

Finally, the solids at the end of the process are a cleaner Class A biosolids product that DC Water uses as a compost-like material. Biosolids products are currently being used around the District for urban gardens and green infrastructure projects. DC Water is also working to bring a compost-like product to market.

Other cities are already taking an interest with tours taking place every other week. "We hosted staff from San Francisco and Honolulu," said Hawkins. "Any urban 'enriched water' system that is constrained by space and wants to achieve multiple benefits may be well advised to take a look."

He added: "DC Water and many others are demonstrating that with a careful analytical programme to review new ideas, field test them in advance, we can adopt new technologies—even at a massive scale—and deliver better results for our customers, for our city, and for the environment."

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UNITED STATES

Floridian city reclaims stormwater for household irrigation

Rather than build more retention ponds along a stretch of Floridian highway, the city of Altamonte Springs has instead expanded its existing reclaimed water system to direct stormwater runoff for household irrigation.

Prior to the launch of the Altamonte Springs-Florida Department of Transport Integrated Reuse and Stormwater Treatment (A-FIRST), stormwater would run off the Interstate-4 highway into drainage ponds along the side of the road. Overtime some pollutants in the water would seep into the groundwater. The stormwater is now captured, treated and redirected into the city's reclaimed water system to be used for irrigation.



Frank Martz, City Manager, Altamonte Springs (end right), at the opening of the A-FIRST project in November 2015

When there is extra stormwater, the city, at no extra cost, pumps the excess to the neighbouring city of Apopka which is experiencing its own water shortages.

“In addition to providing an alternative water supply, A-FIRST makes a substantial impact on reducing nutrient pollution in the Little Wekiva River system,” said Frank Martz, City Manager, Altamonte Springs.

The project, at a cost of US\$13 million, is being almost entirely funded by the State of Florida through their savings from not having to build retention ponds. It is expected to reclaim 6 million cubic metres a year.

“The partnership aspect of the A-FIRST project was one of the most crucial aspects,” said Martz. “All of the partners were made aware of the multiple benefits the project could bring; from alternatives to groundwater withdrawal in the Central Florida region to the cost savings that were possible.”

Martz admits that a city would first need in place a reclaimed water system, something which his own city built 33 years ago—Project APRICOT—and was one of the first of its kind in the southeast of the US.

“In the first discussions about the project there were of course doubts and hurdles,” added Martz. “The city just kept plugging away at each point as it arose and just like *The little engine that could*, made A-FIRST a model to follow.”

UNITED STATES

US army to help restore the Los Angeles' river

Eric Garcetti, Mayor of LA, has announced that the Chief of Engineers of the US Army Corps of Engineers, Lieutenant General Thomas Bostick, has signed off on the plan to restore the Los Angeles River, a major milestone in efforts to transform the river's aquatic ecosystem. This approval is a critical step toward moving the city's project forward to the US Congress for authorisation and appropriation of funding. “Thanks to our partnership with the US Army Corps of Engineers, we have reached a watershed moment for a riparian revival in Los Angeles,” said Garcetti. “This plan represents more than ten years of hard work and unprecedented collaboration and gives us the opportunity to transform both the river and our city.”

IRELAND

Limerick City to update water mains

Irish Water will invest €6.5 million in Limerick City's water mains to reduce leakage, improve customer service and supply, and increase health measures. The utility outlines that the works will save the city 11 million litres of water per week. Over 11 kilometres of water mains will be replaced, 13.4 kilometres of problematic shared lead service pipes will be decommissioned and nearly 2,000 customer service connections around the city will be replaced. The shared services have been a health concern as lead has been slowly absorbed into the water supply with the potential to increase levels above safe limits.

UNITED STATES

Largest seawater desalination plant in US up and running in San Diego

The Claude “Bud” Lewis Carlsbad Desalination Plant has officially opened and has already produced more than 5.7 billion litres of locally controlled water for San Diego County, helping to minimise the region's vulnerability to the California drought. The plant is the result of a 30-year Water Purchase Agreement between the plant's developer and owner, Poseidon Water, and the San Diego County Water Authority for the production of up to 69,000 cubic metres of water per year, enough to meet the needs of approximately 400,000 people. The US\$1 billion project includes three main components: the desalination plant adjacent to NRG Energy's Encina Power Station on Agua Hedionda Lagoon; a 16-kilometre pipeline that connects to the Water Authority's regional distribution system; and upgrades to Water Authority facilities for distributing desalinated seawater throughout the region.

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Smart cities need smart urban governance

By **Raina Singh**, Associate Fellow, Cities and Transport, The Energy and Resources Institute (TERI)

The Ministry of Urban Development launched the Smart Cities Mission on 25 June 2015 with the aim of promoting cities that provide core infrastructure, give a quality of life to citizens and offer a clean and sustainable environment through the application of 'smart' solutions. The mission is an ambitious flagship scheme of the Indian Government with US\$7.5 billion earmarked for investment across 100 cities over a period of five years. A city challenge was floated wherein cities were asked to submit their smart city proposals to receive funding under the mission. Based on their proposals, the top 20 scoring cities would be selected for Round 1 implementation and the next 80 in Round 2 and Round 3 subsequently.

The Round 1 submission process was completed on 15 December, 2015 and for the first time saw an extensive participatory planning approach at the city level across the country. Although there has always been a stage of 'public objections and suggestions' in the traditional master planning process in Indian cities, anything beyond that was considered unviable, extraneous and time consuming by planners and policy makers. The Smart Cities Challenge saw cities come up with proposals within a period of approximately 100 days and use multiple innovative ways and means for citizen engagement. These included public campaigns on the streets and through electronic, print and social media platforms. The engagement process also witnessed extensive enthusiasm and participation with citizens coming up with detailed suggestions for realising their smart city vision. Numerous ideas were submitted throughout the proposal preparation process on discussion forums and social



Raina Singh, Associate Fellow, Cities and Transport, The Energy and Resources Institute (TERI)

The Smart Cities Challenge saw cities come up with proposals within a period of approximately 100 days and use multiple innovative ways and means for citizen engagement like never before

media pages of city governments, and the government portal—mygov.in.

It is clear that citizens' aspirations have now shifted from basic infrastructure and services to achieving global benchmarks. Most of the competing

smart cities envision environmental sustainability, resilience, inclusive growth, heritage conservation, and strive for a vibrant economy with state-of-the-art infrastructure. While a number of smart solutions have been proposed

to improve the efficiency of physical infrastructure systems, like transport, waste management, and water and energy supply, a smart urban governance based on open data and an IoT-driven approach is equally important for citizen-centric governance and informed decision-making in a smart city.

In the first place, this will require a single point data store with an integrated acquisition system, which is fed by information from various networks, so that this information can be used for individual e-governance applications. For example, for citizen services like billing, grievance redressal, and dissemination dashboards. However, most urban local bodies in India face significant human resource constraints and do not have the capability to implement such systems. It has been suggested by many that developing a centrally hosted cloud based solution at the level of the central or state government may be one of the few immediate options to ensure that the e-governance component of the smart city architecture does not stand in the way of timely implementation of smart cities on the ground.

Similarly, apprehensions were raised regarding timely and effective implementation of the mission by urban local bodies owing to their existing financial capacity constraints. The Reform Agenda identified under the Jawaharlal Nehru National Urban Renewal Mission was also not completely implemented by a number of urban local bodies which are still using old methods of accounting, most of which lack a credit rating. Now, each of the cities implementing smart city proposals will require a minimum investment of US\$150 million. Therefore, the task of implementation of the proposals was entrusted to 'special purpose vehicles' which will be constituted afresh in all the smart cities to plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the smart city development projects.

The vehicles will have complete operational independence and autonomy in decision-making and mission implementation, and will be headed by an exclusive CEO and



The Smart Cities Mission is an ambitious flagship scheme of the Indian Government with US\$7.5 billion earmarked for investment across 100 cities over a period of five years

Most of the competing smart cities envision environmental sustainability, resilience, inclusive growth, heritage conservation, and strive for a vibrant economy with state-of-the-art infrastructure

board of directors which will have representatives and nominees from central government, the respective state government and the urban local bodies. Besides, there will be ex-officio representation from the existing public departments and utilities as well.

Though taking up immediate and short term solutions—which do not involve the urban local bodies directly—will definitely speed up the process of implementation, it cannot be a lasting working model. For one thing, it will further discourage the development of city governments into effective and

accountable autonomous entities as envisaged in the 74th Constitutional Amendment Act of India. Secondly, it will add to the already existing multiplicity of authorities with overlapping functions which reflects the failure of development plans and lack of effective urban management in Indian cities. Systematic capacity building of the local bodies is, therefore, necessary at the proposal implementation stage to monitor and manage the new smart city projects for effective, well-resourced and democratically accountable urban governance. ■

The outcome of India Smart Cities Challenge Round I was announced by the government on 28th January. The following cities made it into the top 20 list; Bhubaneswar, Pune, Jaipur, Surat, Kochi, Ahmedabad, Jabalpur, Visakhapatnam, Solapur, Davangere, Indore, New Delhi Municipal Corporation, Coimbatore, Kakinada, Belgaum, Udaipur, Guwahati, Chennai, Ludhiana, Bhopal.

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Financing India's smart cities mission—the Special Purpose Vehicle

By **Sarbojit Pal**, Fellow, Centre for Sustainable Transport and Urban Development, The Energy and Resources Institute (TERI), and **Sushmita Singha**, Consultant, Lucid Solutions, New Delhi



Municipal bonds have historically been the tool of choice for raising public finance for infrastructure projects

After the first round of shortlisting of cities by the states resulting in a selection of 98 cities for the Smart Cities Mission, and the remaining two in Jammu and Kashmir and Uttar Pradesh still being contended, the second stage of evaluating the Smart City Proposals is being currently conducted with the support of the Bloomberg Foundation, the knowledge partner for the Ministry of Urban Development (MoUD) for the mission.

After the first 20 smart cities were selected at the end of January (see page 82), the next step is to set up a Special Purpose Vehicle and begin executing the proposals. Understanding the capabilities and limitations of the municipalities, such vehicles have been made the centre

stage of the smart cities implementation exercise, right from planning, appraising, approving and releasing funds through to the administration of projects.

The central government has earmarked US\$7.5 billion to be provided to the 100 cities over five years, with an equal contribution due from the states and the urban local bodies. Two-fifths of this amount will be provided upfront in the first year, after which yearly instalments will be disbursed in consecutive years. The latter instalments would be released to vehicles only after certain conditions have been met.

A Special Purpose Vehicle (“vehicle”) can be established as a company under the Company Act 2013, with equal holdings of equity shares by the state and urban local bodies and provisions

for private shareholding, provided the government shares are in the majority. A full time CEO and a board with representation from the central, state and local governments will be in charge of the administration of the vehicle. It is the prerogative of the states and urban local bodies to ensure a dedicated and robust source of revenue to the vehicle, and investment decisions would also be made at their discretion. In order to enable operational efficiency and administrative independence of the vehicle, the guideline encourages adopting best practices of vesting project specific powers and responsibilities of the urban local bodies and state governments.

Excluding the grants from the central and state governments, the remaining funding requirements for projects

envisaged under the mission are to be met through a host of tools available to urban local bodies. These include user charges, public-private partnerships, 14th Finance Commission allocations and land-based fiscal tools such as property taxes and betterment taxes, municipal bonds, loans from bilateral and multilateral organisations, the National Investment and Infrastructure Fund (NIIF), and provisions under other government programmes. The options available to urban local bodies appear to be plenty, but in terms of the scale of mobilisation of resources, most of these sources are limited. For instance, revenue from user charges for water supply or other civic amenities—even in the best performing municipality—account for only 40 percent of the total expenditure due to leakages and unmetered use.

Property tax coverage in most cities is not 100 percent, and the rates are not reflective of the value of the properties. Municipal bonds have historically been the tool of choice for raising public finance for infrastructure projects. In recent years they have been experimented with by some of the progressive and bigger local bodies in Gujarat, Maharashtra, Karnataka, and Tamil Nadu but have been met with limited success in attracting capital from the domestic markets. However, these markets are not very active. There are problems with respect to proving the credit worthiness of the municipalities which run mostly on deficits, having to depend on grants from the upper tiers of government and loans from multilateral organisations such as the World Bank.

The vehicles need to manage these funding woes and be innovative in raising finances from market borrowings even under such adverse conditions.

Other than this, the 14th Finance Commission has earmarked over 871 billion Indian rupees (US\$12.8 billion) to augment the funds of the country's urban local bodies, a portion of which is a conditional disbursement. The National Investment and Infrastructure Fund which has a corpus of 200 billion Indian rupees sanctioned by the union government and another 200 billion to be procured from private investments has been set up to invest in commercially viable projects.

Public-private partnerships have been highlighted in this respect.

Water supply, sanitation and solid waste management projects entail long-term debt and cost recovery is very low and slow because of the population cluster these projects mostly target. Since the smart city concept heavily relies on ICT-enabled service delivery mechanisms—even though the core objective remains that of providing better city infrastructure through integrated systems—expenditure on technology upgrades and basic infrastructure will be a costly affair for urban local bodies. This would involve not only capital investments for setting this up, but also substantial operations and maintenance costs. Thus, the additional funds are a real concern for the investment vehicles.

However, India has some successful experiences to learn from. One of these includes the Tamil Nadu Urban Development Fund (TNUDF). The fund was established as a trust under the Indian Trusts Act 1882 jointly by the Government of Tamil Nadu (71.5 percent), Indian banks ICICI and HDFC, and infrastructure and financing company,

Property tax coverage in most cities is not 100 percent, and the rates are not reflective of the value of the properties

IL&FS, with a line of credit from the World Bank. The trust is controlled by the Tamil Nadu Urban Infrastructure Trustee Company Limited which is at arm's length from the state government and prescribes policies and procedures for using the fund. It is managed by a non-government Asset Management Company, Tamil Nadu Urban Infrastructure Financial Services Limited, under a management contract.

The company, since 1986, has successfully managed the line of credit, not only because of this organisational setting and its adherence to stringent loan conditions but also due to a host of other enabling conditions such

as effective use of escrow of property tax and other local body collections, advanced credit enhancement by the government, commitments from domestic and international governments to meet shortfalls if any, and a focus only on capital investments. The investment vehicles for the smart city proposals need to learn from the best practices of institutions such as the Tamil Nadu company.

Two types of vehicles could be considered a state-level financial intermediary, and a state-level project development and fund management company.

The basic purpose of the state-level financial intermediaries is to mobilise funds from multiple sources, make preliminary scrutiny of projects and check for consistency with existing policies, channel funds to the local bodies and manage recovery of loans and repayment to investors. The intermediaries could be constituted as a trust, company, or a combination of the two wherein a company acts as the fund manager for the trust. It could also take the form of joint ventures between two or more entities. The structure of operation of the Tamil Nadu example is a mix of a trust and a company. Such a state-level financial intermediary takes charge of the overall financial functions, from raising finance in the market from governments at the national and state level, from official development assistance as well as from private investors. It decides the kind of projects which receive financial support, and ensures that local bodies are able to repay the loan amount on time along with interest payments.

Given the important role of these institutions to the success of the smart city proposals, it will be crucial to develop a detailed plan for structuring the investment vehicles under this programme. In addition to developing a structure for these smart city proposals, an appropriate regulatory process needs to be drawn up to ensure efficiencies in their operation with minimal government intervention and leakages. Adequate care needs to be taken in the planning of this stage of the Smart Cities Programme, since its success will be highly reliant on the effectiveness of such vehicles. ■

Interview: Ranjit Chavan, President, All India Institute of Local Self-Government (AIILSG)

How does AIILSG work with cities in India and what have been the obstacles to increased municipal collaboration?

AIILSG has been working with urban local bodies in India for the past 89 years. Over the years it has also increased its geographical footprint by establishing 30 regional centres across India. It provides support to urban local bodies by providing capacity building for efficient service delivery and also as part of outreach programmes.

At AIILSG, we are privileged to have a global perspective on the work that urban administrations and national governments are doing to develop sustainable and achievable solutions to urban challenges. We recognise the value of sharing insights and lessons to help cities cultivate a clear approach to urban infrastructure development.

One way in which we advance this goal is by publishing our professionals' globally applicable experiences, insights and advice as they work to advance the agenda on sustainable cities.

With the increasing demand for consultancy in the field of urban development, AIILSG has put its foot forward and has accomplished various assignments/jobs under various National Policies and Missions. The major obstacles encountered are the lack of political and social will as well as primary data validity and acquisition.

Prime Minister Narendra Modi has announced that the government will set up 100 smart cities across the country, through the India Smart City Challenge. Please tell us about AIILSG's role.

AIILSG is proud to have been part of the Smart City Mission acting as an empanelled consultant for the preparation of Smart City Proposals.



Ranjit Chavan, President, AIILSG

Under the mission, we have successfully submitted four Smart City Proposals for the selected 98 cities.

Within these proposals, we have captured some of the most innovative concepts and practical insights from our publications and presented them here to provide what—in our opinion—is one of the most definitive reviews of literature on the subject of sustainable cities.

What has been the response and commitment from the cities and their leaders to the announcement? Have they shown a real desire to be nominated by their state?

The municipal as well as district administrations have shown remarkable dexterity and have looked at their city from a fresh perspective. They have looked for out-of-the-box solutions to make their city smart and put tremendous effort into achieving this.

Cities and their leaders have to raise an amount of 100 crore (1 billion rupees (US\$14.8 million)) per year in addition to the 100 crore being offered by the

central government after the successful submission of the Smart City Proposal for their respective city.

Are local municipal leaders in a position to be able to carry out these ambitious plans for smart cities? How much capacity building is still required in cities to realise the smart goals?

All types of initiatives have been proposed to make a city stand out in the competition to be nominated as one of the top 20 cities to be announced in the first year.

Each selected city has its own unique urban fabric, hence their requirements are also unique. Urban governance at present lacks the requisite know-how as well as capacity to undertake such projects and cities would require a lot of handholding and capacity building to achieve the desired objectives.

The development of sustainable cities requires governments and city administrators to focus on creating a supportive policy environment that encourages both financial and environmental sustainability. Indeed, there is a growing recognition that—across the spectrum of infrastructure—different sectors often require very different policy approaches.

Creating supportive policy must also happen at the city level in order to overcome local challenges. For example, in Mumbai, the local government has created policy that incentivises developers working on infrastructure projects to build tenement housing for some of the 60 percent of residents that currently live in slums.

Policy is also critical at the tactical level. Both privatisation and the creation of regulated asset-backed structures require governments to develop robust

policy frameworks in order to ensure that both investors and users are properly protected.

This will require a greater focus on policy integration between levels of government as well enhancing the public sector's ability to understand and operationalise proper urban land use planning to accommodate sustainable development.

Where will the financing come from?

The funding will be through seed capital of 500 crore (5 billion rupees/ US\$74 million) from the Government of India and 500 crore from the State and the rest of the funds will come through (PPPs) or the levy of other taxes and user charges.

What has been the response from citizens to the smart city plans? Have they been involved and consulted in the process?

The cities developed their vision and strategies based on extensive citizen consultations spread over three rounds. This made sure that the city plans were well grounded in the local context and provided the base required for any city development project.

Preparation of the Smart City Proposals has been a totally citizen-driven process. Their suggestions and feedback have been taken through various means such as written submissions, social media, through government websites and various focus group discussions as well as ward-level consultations so as to achieve a homogenous and representative mix of suggestions from citizens.

How important is it for the cities to learn from each other and from others around the world?

It is very important that the cities in India first learn from each other's innovative ideas and good practices and then look outside at western countries.

What do you think are the key challenges facing Indian cities and how can AIILSG help in finding solutions?

The key challenge in Indian cities is the lack of skilled human resources, innovative solutions and a sustainable funding mechanism.



(L-R) Ranjit Chavan, the Hon. Sumitra Mahajan, Speaker of the Lok Sabha (Lower House of the Indian Parliament) and Hon. Nitinbhai Patel, Minister in Gujarat

“The key challenge in Indian cities is the lack of skilled human resources, innovative solutions and a sustainable funding mechanism”

AIILSG, as a training and capacity building institute, is providing help to urban local bodies in making their human resources efficient and bringing in various national and international experts to provide innovative solutions with sustainable funding.

You are a Co-President of UCLG ASPAC which will host its Executive Bureau Meeting in Mumbai in April. What are your plans and expectations for the meeting?

For government, it is increasingly important to look at achieving their

objectives through sustainability. That means creating policy that encourages long-term planning, and refocusing procurement approaches to reward sustainability. It also means securing funding that recognises the ‘whole of life’ cost of infrastructure rather than just the design and build phases.

The Executive Bureau Meeting of UCLG ASPAC will be a platform for all mayors and local government leaders across the Asia-Pacific region to deliver their voices, views, thoughts and interests related to sustainable urban development. This year, among others important discussions, we would like to focus on the Smart Cities Mission of the Government of India and how Asia-Pacific members can benefit from the strategies of the programme.

In addition, it will also be a cherished opportunity to share and discuss Asia-Pacific best practices and experiences. The meeting will also emphasise and elaborate upon the various instruments available for sustainable development. ■

Barcelona Resilience Week

Sant Pau Art Nouveau Site, 14-18 March 2016

In 2015, cities played a major role on the international stage. These efforts included the intergovernmental outcomes of the World Conference on Disaster Risk Reduction's Sendai Framework for Action, the Financing for Development's Addis Action Plan, the 2030 Development Agenda's Sustainable Development Goals, and COP 21. UN-Habitat City Resilience Profiling Programme, together with the City of Barcelona, will reconvene a major conference on urban resilience during the week of March 14-18, 2016.

Barcelona's Resilience Experience in February 2015 drew over 170 participants and more than 20 cities. Building on that success, the BCN Urban Resilience Partnership, UN-Habitat's City Resilience Profiling Programme and the City of Barcelona are launching the Barcelona Resilience Week, a global platform for discussion and learning between leading cities and companies working to build more resilient communities all over the world.

In this regard, the event aims to not only give voice to and connect cities, but also to provide the opportunity to learn about groundbreaking resilience topics, to present, share and exchange experiences and best practices, and to gain practical knowledge. Likewise, the focus of this edition is on facilitating spaces for interaction, that offers attendees the chance to develop new contacts and partnerships, and foster networking opportunities between cities and companies with an extensive experience at implementing resilience projects, and experts from international institutions.

For this year's edition, more than 250 attendees are expected, including representatives from more than 50 cities

The Barcelona Resilience Week will feature a variety of sessions such as:

- High-level panels discussing the impact of the migratory crisis or the effects of climate change.
- Parallel sessions on the implementation of resilience projects and initiatives through the presentation of case studies and specific projects.
- City networking meetings aimed at promoting the exchange of good practices and fostering city-to-city alliances and initiatives.
- Site visits, which will offer a unique opportunity to experience first-hand how Barcelona is strengthening its capabilities to become more resilient to a slew of threats.

The event will encourage a holistic view of the urban system, one that considers multiple and varied shocks and stresses, including natural, technological, economic, social and political hazards. In this way, the sessions will cover a wide variety of topics, including:

- resilience challenges
- community of practice
- public private partnerships
- migration impacts

For more details, see: www.bcnurbanresilience.com



Upcoming events

URBAN FUTURE Global Conference

DATE: 2-3 March 2016

DESTINATION: Graz, Austria

WEBSITE: www.urbanfuture.at

DESCRIPTION: The URBAN FUTURE Global Conference is one of the world's largest events for sustainable city development. Around 1,500 participants will hear about the newest developments in urban mobility, climate protection, resource preservation and communication in large cities. City changers from four continents, among them former Berlin mayor Klaus Wowereit, Israeli city development expert Hila Oren and Danish-Canadian mobility expert Mikael Colville-Andersen, will be presenters at the conference.

Environment

GCC Environment Forum 2016

18-20 April 2016, Jeddah, Saudi Arabia

8th European Conference on Sustainable Cities & Towns

27-29 April, Bilbao, Basque Country

Carbon Expo

25-27 May 2016, Cologne, Germany

Metropolitan Solutions

31 May-2 June, Berlin, Germany

ICT

IoT Tech Expo Europe 2016

10-11 February 2016, London, UK

Mobile World Congress

22-25 February 2016, Barcelona, Spain

RE-WORK: The Connected City Summit

16-17 March 2016, London, UK

Beyond Data Event

29 March 2016, Eindhoven, Netherlands

IoT Asia 2016

30-31 March 2016, Singapore

Smart IoT London

12-13 April 2016, London, UK

Major Cities of Europe

30 May-1 June, Florence, Italy

Transport

Integrated Systems Europe

9-12 February 2016, Amsterdam, Netherlands

IT Trans 2016

1-3 March 2016, Karlsruhe, Germany

ITS & Road Safety Forum UAE

21-22 March 2016, Abu Dhabi, UAE

Intertraffic

5-8 April 2016, Amsterdam, Netherlands

International Transport Forum

18-20 May 2016, Leipzig, Germany

ITS European Congress 2016

6-9 June 2016, Glasgow, UK

Parkex 2016

15-16 June 2016, Coventry, UK

Sport

City Events

14-15 March 2016, Paris, France

Urban development

Smart City Expo Puebla

16-18 February 2016, Puebla, Mexico

EUROFORUM Smart City Event

7-10 June 2016, Amsterdam, Netherlands

World Cities Summit 2016

14-16 July 2016, Singapore

Urban Transitions Global

Summit 2016

5-9 September 2016, Shanghai, China

Urban Planning

Smart Building Conference

8 February 2016, Amsterdam, Netherlands

MIPIM 2016

15-18 March 2016, Cannes, France

Security and Counter Terror

Expo 2016

19-20 April 2016, London, UK

Water

Singapore International

Water Week

10-14 July 2016, Singapore

World Water Week

27 August-2 September 2016,

Stockholm, Sweden

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Lianne Dalziel, Mayor of Christchurch

Why did you become mayor?

After a disaster there are different styles of leadership required. I felt I had a style which would be useful to a city in the recovery phase and now leading to regeneration.

What is your favourite part of the job?

I like honouring citizens who have performed outstanding service for their community (Civic Awards). I also love performing citizenship ceremonies, as these are such an important milestone in people's lives.

What is the biggest challenge you have faced since becoming mayor?

The financial challenges facing our city cannot be overstated. When I came in to office in 2013, we found a massive shortfall in our budget. This, as well as not having the security of our insurance being settled with obligations having been agreed by the previous Council with Central Government, was very difficult.

What do you think have been your biggest achievements?

Passing a Long Term Plan which gives the city confidence that we have the capacity to rebuild much needed community facilities was a huge achievement. Also, re-establishing our place as the South Island's gateway and destination in our own right (beginning of a direct flight from mainland China to Christchurch) was only a dream two years ago. Now it is a reality and this is very satisfying.

What was your last overseas trip as mayor?

I travelled to Europe for a 100 Resilient Cities leadership retreat. I then stayed on for a City Lab conference in London.

Who is the most interesting person you have met or worked with since becoming mayor?

I have met many amazing people since becoming mayor, including mayors from



Foto: Christchurch City Council

Lianne Dalziel

CITY, COUNTRY OF BIRTH: Christchurch, New Zealand

EDUCATION: LLB (law) degree from the University of Canterbury

DATE ELECTED MAYOR: October 2013

PREVIOUS EMPLOYMENT: Member of Parliament for 23 years, including over seven years in Government as a Cabinet Minister

other cities who have faced significant challenges and members of the Royal Family who visited Christchurch. I've also met inspirational people who have made a difference in fields as diverse as architecture, film making, writing and science.

What do you think of social networking for mayors?

I have a Facebook page and a Twitter account. I find it hard to keep up with these social media avenues! I like Twitter because of the restricted number of characters and it's such an instant way of communicating. I would like to get into Instagram this year. Social media is an important means of communication, particularly with the younger generation.

Favourite place in your city and why?

Hagley Park and the Botanic Gardens because I love to walk around them

with friends every week. We are so lucky to have such an amazing green heart in our city which was set aside by the European settlers for the benefit of future generations.

Where do you expect to be in five years' time?

I have absolutely no idea!

What are you reading right now?

I have some books set aside for holiday reading, including *The Third Coast* by Thomas Dyja. I met the author when I was in London recently.

Are you an early bird or a night owl?

I'm a night owl—I like to sleep in, but I don't get much chance to do so!

Hobbies and interests outside of work?

I like reading, love movies and high-quality TV series (I tend to buy the DVD set and I sit down and watch the whole series!)

Do you have a favourite sport team?

The All Blacks of course!

Favourite travel destination?

Coromandel in the North Island of New Zealand. It has the most exquisite white beach surrounded by Pohutukawa trees (New Zealand Christmas trees).

Who is your hero or inspiration?

Helen Clark, former Prime Minister of New Zealand. She is now playing a huge role internationally as Administrator of the United Nations Development Programme.

What advice would you give to the first time visitor to your city?

I would tell them to enjoy what we have now, but do come back to see what our city has become for the future.

What is your life philosophy?

To always look for the potential in other people and to encourage them to achieve that potential. ■



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