

Industry Agenda

Accelerating Sustainable and Smart Cities

Co-Organized by the World Economic Forum, the World Bank and the China Center
for Urban Development
On the Occasion of the Fifth Annual International Urbanization Forum

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Foreword

On 31 March 2013, the World Economic Forum, the China Center for Urban Development and the World Bank welcomed approximately 50 city leaders and 100 experts and senior executives from more than 15 countries and 10 industries for an exchange on innovations and strategies to accelerate smart and sustainable cities in China and around the world. The gathering was held on the occasion of the fifth Annual International Urbanization Forum, an event that equipped over 600 participants with the latest insights on urbanization in the People's Republic of China.

The “Accelerating Smart and Sustainable Cities” meeting marked a milestone for the World Economic Forum’s Future of Urban Development Initiative. Under the initiative, industry leaders and experts serve as partners for cities as they address major challenges. The initiative aims to make innovation accessible to city leaders and businesses in a mutually beneficial setting and to explore the implications of new technologies and hyperconnectivity for cities.

With an urban population that is expected to grow by an additional 350 million by 2025,¹ China is at a critical point to adopt new methods to lock in sustainable land development patterns and smart city management practices. Held less than one month before the inauguration of the new Chinese administration, the Accelerating Smart and Sustainable Cities meeting provided the opportunity to catalyse China’s transition from a case study of extreme urbanization to one of leadership on the frontier of urban innovation.



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This event plays an important role in advancing our ongoing effort to establish new models for urban problem solving, where global experts work together with mayors and local groups to address specific problems that they are facing. By learning how to build smart, sustainable cities in China, one of the most connected and rapidly urbanizing societies in the world, we can help to accelerate transformation in other cities around the world facing similar challenges.

”
Olivier Schwab, Executive Director, World Economic Forum Beijing



“
Urbanization will continue to be a major driver of economic growth in China for the foreseeable future. This collaboration established between CCUD and the World Economic Forum will play an important role in developing China’s cities while helping us to learn from the world.

”
Li Tie, Director General, China Center for Urban Development (CCUD), People’s Republic of China



“
There is no future in rural poverty.

”
Abha Joshi-Ghani, Director, Thematic Knowledge and Learning, World Bank, Washington DC

Highlights: Examining China's Urbanization

China's New Leadership: New Focus on Urbanization

The inauguration of a new central government administration has signified a new chapter for China's cities, with signs of rapid action to address the country's extreme urbanization rate and shift towards sustainable, smart patterns. Li Keqiang, the incoming Premier of the People's Republic of China, has stressed that urbanization should be people-oriented, and has declared low-carbon green development a national priority. To meet the goals, a National Plan for Promoting the Healthy Development of Urbanization (2011-2020) is under development by the National Development and Reform Commission (NDRC). These actions represent the highest level of attention to urbanization by Chinese officials to date.

The Changing Nature of Urbanization: Fewer Workers, More Children and Elderly

China has experienced unprecedented urbanization as a result of the industrialization and economic reformation during the past 30 years. In the past 10 years in particular, the country's urbanization rate has increased by 1% annually, meaning that more than 10 million people have moved into cities in China each year.

Urbanization is expected to increase; by 2020, China's urban population is projected to pass 800 million. However, the nature of urbanization will change in the coming years. In the past decades, those moving to cities have been predominantly people of working age seeking employment opportunities. At this point, most of the labour force in rural areas is already working in cities, and people remaining in villages are commonly the elderly, children and housewives. The next phase of urbanization is expected to have reduced labour but more rural citizens in need of public services and infrastructure.

Addressing Semi-urbanized Populations: Houkou Status

At the forefront of the challenges brought by rapid urbanization is the gap between "officially urbanized" citizens and "semi-urbanized" populations. Officially urbanized citizens have the legal ability to move into a particular city and register within that city. This status, referred to as "Houkou", provides full access to services including healthcare, education and social security.

Many semi-urbanized citizens in China have migrated to cities in search of employment and lack Houkou status, and therefore have limited access to public services and welfare benefits. According to national statistics, the semi-urbanized population was estimated to represent more than 15% of all city dwellers in 2010.

The majority of semi-urbanized citizens are migrant workers employed in mid- to low-income jobs such as construction or small businesses. They have played a critical role in China's construction boom over the past decades. Yet, despite its important role, the semi-urbanized population has been peripheral on the political agenda to date. The issue is now rising in prominence as concern increases about the threats to social stability as a result of income and service inequality.

Moving Forward: Expanding Welfare – Consensus on Quality Development

Experts agreed that the focus on urban development must shift from speed to quality in the coming decade. As a first step, government should prioritize the expansion of infrastructure and welfare systems to support semi-urbanized populations. Simultaneously, as part of its "urban-rural integration strategy", the central government should gradually decouple the country's welfare system from its household registration system, which would grant all Chinese citizens access to public services, whether urban, rural or semi-urbanized.

The government can also play an important role in rebalancing resource allocation between large and small cities. Experts call for additional support for pilot projects in small cities, which are viewed as promising testing grounds for sustainable urban development. Additional resources are also suggested to be allocated to infrastructure projects that can be shared by multiple cities to reduce duplicative investments.



Highlights: Insights to Accelerate Smart and Sustainable Cities around the World

Emerging Models: “Government as a Platform”

For centuries, societies around the world have followed a model of top-down city development which has involved centralized systems for the delivery of transportation, energy, health, water and other infrastructure services that function in independent silos. Yet, the aging nature of the infrastructure in existing cities, extreme rates of urbanization, impending climate change risks, and the rise of social networks and technologies that allow people to communicate at hyper speeds are suggesting that this traditional centralized model of running cities may no longer work, and that city governments cannot alone solve the increasingly complex array of urban challenges.



New models of city development and urban problem solving are emerging and blend top-down approaches with bottom-up efforts. “Government as a platform” is a prominent concept in which the government proactively engages citizens and small and large businesses, co-create solutions for civic problems and then deploy them.

- In 2012, Singapore created a process to engage citizens in developing smart city solutions. The city’s Economic Development Board engaged 250 Singaporeans from the general public in an “Urban Prototyping” exercise. The weekend-long event generated 30 solutions. The city then floated the 30 solutions to see which ones companies would invest in.
- In Barcelona, Spain, the mayor drives his vision to be a smart city by engaging citizens to actively participate in planning the future of the city. There is leadership at the bottom, where well-organized groups participate in sharing perspectives and helping to derive solutions.
- The World Bank is working with communities in Colombia to create road maps where citizens identify key priorities. Solutions are then co-created with academic institutions, private sector businesses and other interested parties. The ideas are tested in urban living labs and implemented with real-time feedback from citizens.

From the Climate Change Department of NDRC’s perspective, balancing top-down and bottom-up approaches is a critical challenge to be addressed to achieve low-carbon development in China.



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Smart cities recognize that educated, engaged, smart citizens are what make cities smart, not the city or its hardware. City leaders use data and technology as levers to advance their goals, but are not beholden to them.

”

Chris Vein, Chief Innovation Officer for Global Technology Development, World Bank, Washington DC

Citizen Feedback Loops

Feedback loops are an essential element in the “government as a platform” concept so that solutions can be made better iteratively. Social media and technology are frequently used as levers to engage disparate populations, to crowdsource ideas and solutions and to create feedback loops.

- In China, the He Yue City App (Harmonious and Happy City mobile application) enables citizens to use mobile devices or go online to post ideas for city improvements that are shared with city leaders.
- Melbourne, Australia, publicized both the mistakes and best practices it made while building a new city government building that would become Australia’s greenest building. The city made the building process open to the public so that citizens could learn from the government’s mistakes.
- New York City’s PlaNYC process measures and shares detailed results of its long-term planning and sustainability process on an ongoing basis. Progress and failures as they measure against the plan are published on a publicly available website on a quarterly basis.



“
To become smarter, a city government must be prepared to go out and try new things... and go public with all the things that work and all the things that don’t work.”

”
Robert Moore, Head of Urban Design, City of Melbourne, Australia

Breaking Silos through Restructured City Government

Many city governments are restructuring traditional planning processes to advance sustainability and smart city concepts. The new structures promote cross-sector planning, bringing together the spectrum of independent departments to jointly find solutions and to delivering services more efficiently.

- In New York City, USA, the establishment of the Office of Long-term Planning and Sustainability changed the organizational structure of the city government by breaking the traditional silo approach to urban service delivery in order to advance sustainability. The office was established directly under the mayor and is responsible for coordinating and integrating government departments including transportation, energy, waste, housing, water, health and education. Its main achievement was to bring the departments together in a comprehensive planning process called “PlaNYC 2030”, which created a sustainability blueprint for the city’s future. Under the plan, all departments work towards a set of objectives that was established through an extensive citizen engagement process.
- In Canada, the Calgary 2020 Sustainability Direction is the only official document that has been endorsed and signed off by every senior manager of the city of Calgary. As a result, every decision that senior managers make in transportation, land use, waste, water or community services must abide by the overall sustainability direction.



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We have to ensure that we put the citizen at the centre of everything we do. It is easy for us to think that we serve the bureaucracy or the process of how things have always been done. We are working hard to shift our mindset so that I and the 20,000 people who work with me at the Calgary government serve the citizen every day. It means having an enormous amount of transparency and openness to ensure that the citizen knows what we are doing. It also means admitting when we are wrong and changing our direction as needed.”

”
Naheed Nenshi, Mayor of Calgary, Canada

Open Data: Cities of the Future will be Data-driven

An emerging best practice is for city governments to engage in “open data”, meaning that they 1) collect an abundance of data relating to urban services, health, sustainability and environment, economics, crime, and a wide range of other urban metrics; 2) share the data publicly; and 3) invite citizens and businesses to analyse the data as part of the solutions-creation process.

The potential benefits multiply: open data can encourage companies and people to develop new ways to deliver services; it enables government to make data-driven and evidenced-based decisions; and it can be an economic development tool to spur innovation-end entrepreneurship within a city.

- Chicago, USA, is using data for “predictive crime fighting”. The city has been collecting data on crime from multiple data sets to gain insight on where crime is likely to happen within the city. Based on the insights, it then moves increased police force to those areas in advance of any crime occurring. In the future, the city believes this concept could be applied to other urban issues, such as traffic.
- Busan, South Korea, has worked with Cisco to create “BMac”, a workspace within the city that serves as a small-business incubator by aggregating multiple urban data sets and making them available to entrepreneurs. The entrepreneurs are then encouraged to analyse the data and commercialize the applications. The government in this case serves as an anchor tenant. This creates a new model for providing small-business services.
- New York City, USA, has made data on the performance of its urban systems public so that citizens and companies can analyse it and create products that are useful to the urban population. The city holds an annual “Big Apps” competition which awards prize money to citizens and small businesses that develop mobile applications that help improve urban life. Boston holds a similar competition.
- In the United States, cities use a system called 311, which is a telephone number that directly connects a citizen to its city government for inquiries, complaints and information. Cities like New York, San Francisco and Chicago analyse the data from the 311 system to have a better picture of what citizens want and how government is responding.

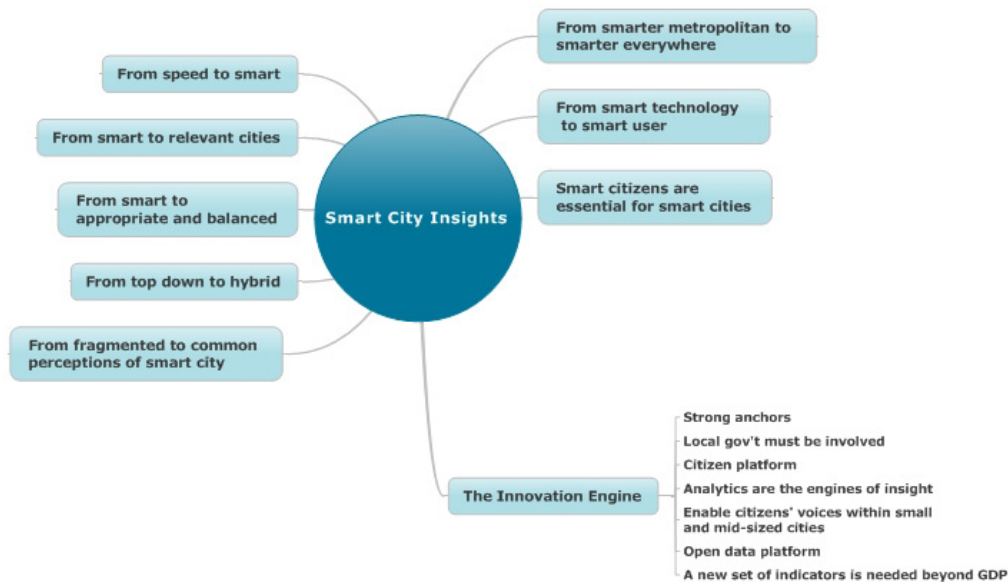


Towards an Internet Protocol for Smart Cities?

Big data is a hot topic, including in cities. As big data is increasingly perceived as a tool to gain a competitive edge over other cities, many city governments are beginning to think about the multiple sources that own and manage urban data, how to collect and organize it, and how to leverage data for economic development.

Increasingly, cities like Rio de Janeiro, Brazil, are creating major operating platforms/control centres to collect, manage and analyse the city’s data sources, often working with big ICT companies on an exclusive basis. There are dangers in this: if each city builds its own operating system, cities may be less able to share innovative applications with one another. Moreover, if these cities work exclusively with one company to create the platform, they may be locked into using the same service provider each time they wish to upgrade.

To avoid the dangers, some experts are creating a “Cities Protocol” similar to the Internet Protocol, whereby cities and companies agree on basic rules for big data management that will enable different city operating systems to talk to each other and to easily transmit data between them. Because of the vast variation between cities around the world, the key to a cities protocol is getting the right level of abstraction.



Big Data and Intellectual Property Laws

The big data opportunity for cities can generally be seen as one of enhanced agility, better understanding of complex issues and an engaged citizenry. The challenge in realizing this vision will lie in the policies and regulations that govern the use of big data. Because data comes from many sources – ranging from private companies such as mobile telephone companies to state-run utility companies, individuals with mobile devices and sensors installed in infrastructure and buildings – it is difficult to create appropriate policies. Policies that are too prescriptive may diminish economic incentives to invest. Policies which are too liberal and market-driven may adversely impact the rights of individuals and foster a lack of trust.

The government must put in place regulations to protect the privacy of citizens and to promote trust, such as intellectual property laws and government guarantees to ensure that funds have been used properly.



Data is the ‘new oil’ – the relevant thing that city leaders, citizens and businesses can use to stimulate social inclusion and economic development into our cities.



Nicola Villa, Global Head of Public Sector, Internet Business Solutions Group, Cisco Systems, Netherlands



The Internet of Everything is fast approaching. With billions of connections and sensors coming online, the opportunity to connect people, processes and objects in wildly innovative ways is just beginning. The opportunity of tomorrow’s cities will be fast, decentralized and emerge from the bottom up.



William Hoffman, Associate Director, Telecommunications Industry, World Economic Forum USA



Smart Cities are cities that have an expanded definition of PPPs: public-private-people partnerships. Government has the responsibility to initiate projects and convene all parties; the private sector has the responsibility to execute; and the people have the responsibility to understand and engage in the process.



Sandra Wu Wen-Hsiu, President and Chief Executive Officer, Japan Asia Group, Japan



01: 2082 : “Leveraging Big Data” Panellists Meng Qingxuan, Guangdong University of Foreign Studies; Balaji Prabhakar, Stanford University; Vicente Guallart, City of Barcelona; Nicola Villa, Cisco Systems; Chris Vein, World Bank; Wang Jianyu, China Electronic Technology Group; Yang Binzhi, Peking University; Deputy Director Zhang Xinhong, People’s Republic of China State Information Center

Embracing the “Sharing Economy”

City governments and businesses serving the urban population should anticipate a growing “sharing economy” whereby people meet their needs by sharing goods and services rather than owning them.

Some companies are challenging the status-quo of consumption by offering shared products and services, providing users the benefit of use of many products without the cost of independent ownership. Companies like Zip car offer a car-sharing model in cities throughout the United States. Cities such as Paris and Barcelona offer bike-share programmes where people can pay to use bikes as needed. The notion is expanding to shared work spaces, music, homes-as-hotels and more. In China, it might be difficult for citizens to move away from the ownership model because cars and other items are seen as aspirational goods, but it will be an important shift from a resource scarcity perspective.

The sharing economy concept can extend to city infrastructure by expanding physical infrastructure across borders and by sharing institutional resources. “Mutualized infrastructure” can reduce the carbon footprint of cities, particularly industrial cities in China. For example, rather than allowing each factory to generate its own electricity or water treatment, cities can mandate that whole industries or clusters share power sources or waste treatment plants. Office buildings and residential buildings, too, can share climate control systems through district heating and cooling. Digital and mobile technology can facilitate the transition of healthcare facilities, workforce training facilities, library resources and more.

Approaching the City as a Partner, Not a Client

The business models for serving cities are changing. In the industrial economy of the 20th century, companies created items and commodities to sell to cities. In the information economy of the 21st century, cities will increasingly demand urban services rather than products from suppliers. For example, instead of procuring lamp posts, trains and road infrastructure, cities could purchase light and transport as a service.

By purchasing services rather than products, cities can potentially benefit through collaborating with other cities to arrange discounted joint purchasing agreements.

“
Cities want to be seen as partners in building smart cities, not clients.

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Vicente Guallart, Chief Architect, City of Barcelona, Spain



01: Roshi Givechi, IDEO; George “Mac” McCarthy, Ford Foundation; Judit Deillinger, ICMA International; Firdose Vandrevala, Hirco Group; Hiroo Ichikawa, Mori Building Company
02: Meng Qingxuan, Guangdong University of Foreign Studies; Balaji Prabhakar, Stanford University; Vicente Guallart, City of Barcelona

Aligning Sustainability/Smart Goals with Performance

Promoting smart and sustainable cities should be aligned with the performance and incentives of government officials. A National University of Singapore study of 283 Chinese mayors' political achievements demonstrated that mayors who focused on GDP growth were promoted the fastest, while mayors promoting innovation, smart and green city development were promoted less frequently as these initiatives with longer-term benefits deliver lower short-term growth.



Investing in R&D and Education: Global Benchmarks

To spark innovation in cities, governments must be prepared to invest in research and development. The government must promote education on a wide scale, and include education for those above 50 years old so that they are technically able. In Singapore, national investment in research and development totals 2.3% of GDP, and the city hopes to invest 3.5% of GDP by 2015. This can be compared to Israel at 4.4%; the United States at 2.8% and China at 1.8%.



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To become a smart city, “not only must government have the data, but government must have an experimental mode of thinking... and must be prepared to invest resources.
”

Chan Heng-Chee, Ambassador-at-Large, Ministry of Foreign Affairs of Singapore

New Tools for Large-scale Portfolio Investment in Urban Systems

Tools are currently being developed to enable the array of urban stakeholders in a given city to visualize the convergence points of the various systems and to identify opportunities for collective, large-scale investing to maximize return on investment. The Climate Knowledge and Innovation Communities (Climate KIC) established by the European Commission in 2010 is currently funding the development of two tools:

- Neighbourhood Demonstrator (N-DEMO) is exploring how 10 stakeholders who are investing a combined total of 200 million euro in a specific neighbourhood in London, United Kingdom, can maximize their return on investment by visualizing the network of urban services in the neighbourhood and then collectively plan their investments in infrastructure systems. There is a similar pilot in Berlin, Germany. Academic institutions from across Europe are helping to create the visualization modelling tools that underlie this process.
- At the regional level, the Ecological Sequestration Trust is developing an integrated modelling system that takes into account both city and rural infrastructure. Local data feeds into the modelling tool to help stakeholders identify opportunities for large, integrated projects and set up portfolio investments. Four pilots are underway in regions in the United Kingdom, Africa, India and China.



01: Adele Naudé Santos, MIT - Massachusetts Institute of Technology; Abha Joshi-Ghani, World Bank; Amir Peleg, TaKaDu; Juan Jose Pocatererra, Grupo InTech Solutions; Charles Doyle, Jones Lang LaSalle

New Business Models to Reduce Energy Consumption

The right business models must be in place to drive sustainability and must be supported by the right incentives. The energy industry in China is a prime example, in which changes in billing and selling practices could significantly lower energy consumption.

Currently, energy utilities have no incentive to provide services more efficiently because they have a guaranteed flat revenue stream every year. The utility companies also have a pricing system which fails to encourage the consumer to cut down on energy use. For example, in China's 15 northern provinces where heating is required by law, heating is billed on a per square meter basis rather than by usage. The government can reduce consumption by enabling utilities to charge households or companies for total energy consumed.



Density and Urban Design Are Equally Important to Sustainability

Participants agreed that dense urban forms and urban design are both fundamental for low-carbon development. Density will shorten the length of trips for citizens to meet their basic needs, while good urban design will help people to choose lower-carbon forms of transportation before choosing to use a personal car.

Density can also reduce network lengths of critical infrastructure, so that cities do not have to spend as much capital or operating budget to install, operate and maintain infrastructure. For example, higher densities make metro and bus systems more cost effective per square meter and tend to generate higher revenues.

- Research by MIT shows that in Jinan, People's Republic of China, residents of newer gated communities consume 70% more operational energy and two times more transport energy than in older, mixed-use neighbourhoods.
- From a mobility point of view, 80% of trips by citizens in the United States are for purposes other than work. This represents a large margin of opportunity to design cities so that people can easily access schools, shopping and hospitals by foot, bicycle, metro, or bus rather than by car.

In China, the incentive structures are currently misaligned to promote dense, well-designed urban growth. Urbanization is also overwhelming the institutions that produce urban plans for mayors, who are under pressure to show results in their three- or four-year cycle.

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Cities are built the way that they are financed and managed. Many people are aware that in Chinese cities, resources come from land sales and auctions, including for recurrent expenditures. If you are going to create incentives for a more compact urban form, then breaking the dependence on land sales is going to be one of the most important actions to take.

”

Gailius Draugelis, Lead Energy Specialist, China, Mongolia and Korea, World Bank, Beijing



01: Raphael Schoentgen, GDF Suez

02: Gailius Draugelis, World Bank; Jit Bajpai, Earth Institute, Columbia University

The Market Is Going towards Transit-oriented Development and “Complete Cities”

Transit oriented development (TOD) refers to the practice of building high-density development around high-capacity public transportation systems such as metro systems or bus rapid transit (BRT) systems. TOD also means ensuring that the areas surrounding public transit stations are high-quality, pedestrian-oriented environments that enable easy access to shopping, public services and other facilities.

Trends demonstrate that more and more people are choosing to live in neighbourhoods where using public transport is part of their daily lives, and where they can work, live, shop and play in that same neighbourhood; and the market is responding.

- In Curitiba, Brazil, high-density development was intentionally planned around bus stations by the city when the BRT system was built. Property developers gravitated towards the city’s investment and plans. The result has been significant: despite similar densities in Curitiba and Sao Paulo, Curitiba’s planned TOD has led to more public transit trips per person per year than in Sao Paulo, and substantially less traffic.
- In Vancouver, Canada, the city government strives to enable residents to meet their needs in a single neighbourhood. When the Falls Creek waterfront was redeveloped, the city planned for mixed income housing that matched the earnings of the workforce in the area, and built good pedestrian and bicycle infrastructure so that residents would make travel by foot or bicycle their first choice.



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A city’s ability to attract and retain highly skilled knowledge-based workers and to compete in the international marketplace hinges critically on providing a lot of choices for people as to how they travel around the city, where they can live, where they can recreate, and how they can play. Shifts in labour markets and real estate price trends around the world are evidence that well-planned and well-designed cities are becoming more competitive markets. Sustainable urbanism and sustainable mobility are effective economic tools.

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Robert Cervero, Professor of City and Regional Planning, and Director, Institute of Urban and Regional Development, University of California Berkeley, USA

Bus Rapid Transit Is the Right Technology for Future Urban Growth

Most future population growth will be in cities with between 100,000 and 500,000 inhabitants. These cities simply will not have the size and density to economically support expensive metro lines. Bus rapid transit will probably be the right technology in these cities because it is much cheaper.

- Guangzhou is among the best international examples of a successful BRT. It has achieved passenger flows equal to that of global metro systems (35,000 passengers per direction per hour), and has provided a high-quality pedestrian environment around the stations. The city has integrated a bicycle-share programme into the system to enable passengers to easily switch between transit modes. Also, the system was designed to be flexible: buses can leave the dedicated lanes to travel into lower-density neighbourhoods and respond to passengers’ needs.

Smart Pricing

One of the most important roles that technology can play in improving urban transportation is by enabling smarter pricing, both in terms of public transportation and personal automobiles.

- Seoul, South Korea, has established “value-pricing” for the entire public transit system using smart card technology. Using GPS, the transit authority can track the journey of each passenger and change a specific fare based on the journey taken. If the train or bus was late, then the passenger is given a discounted fare which is debited on the person’s smart card.
- Singapore and London, United Kingdom, have established congestion pricing schemes, in which drivers of cars are electronically tolled at prices depending on the time of day and amount of congestion on the roads. Higher prices are charged at highly congested times. Such schemes do have limitations: they can only be implemented across an entire city at once, making pilot projects infeasible. They can also be politically difficult to implement.
- San Francisco, USA, has a dynamic pricing system for parking spaces. Drivers are able to locate parking spaces via mobile devices to reduce time that drivers spend searching for spaces.

Until cities embrace smarter pricing, to either penalize people for travelling at congested periods or reimburse them for unreliable service, cities will not be able to encourage a shift in mode of transportation.



01: Robert Cervero, University of California Berkeley leads a table discussion

Financial Incentives: A Different Approach to Tackling Traffic Congestion

The concept of providing financial incentives and other rewards to influence the behaviour of drivers and public transportation passengers has been introduced by Stanford University in several global pilot projects. Whereas congestion pricing schemes charge commuters who travel at highly congested peak times, this scheme does the opposite: cities pay those who are travelling at off-peak times.

Mobile phone and smart card technology track how participants travel, and seamlessly reward the off-peak travellers by debiting their online accounts. All three pilots successfully reduced traffic congestion by shifting the travel behaviour of participants by between 9% and 20%.

- INSINC is a public transit incentive programme developed by the Singapore Land Transport Authority, in which people who chose to ride public transportation at off-peak hours are rewarded through a programme similar to airline rewards programmes.
- INSTANT is a commuter incentive programme for employees of Infosys Technologies in Bangalore, India. It rewards employees for travelling to work by public transportation or by car at off-peak times.
- CAPRI, the Congestion and Parking Relief Incentives, is a programme that rewards Stanford University students to commute by foot, bicycle or public transportation rather than by car to reduce traffic congestion in the city of Palo Alto, where the university is located.



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The Internet works exactly the same no matter what part of the earth you go to. This is very nice from a scalability perspective. Can governments operate from a common standard for smart cities?
”

Balaji Prabhakar, Professor, Departments of Electrical Engineering and Computer Science, Stanford University, USA

Social Media Meets Intelligent Transportation

Cars filled with only a single passenger make up 80-90% of all automobile trips. This represents one of the most wasted resources in the urban sphere. When used collaboratively, intelligent transportation systems and social media can help reduce traffic by enabling passengers to share rides more easily and comfortably.

Several applications enable drivers to use GPS on their mobile phone to locate people along their route who are travelling to the same destination and to offer to share the ride. The technology also allows the driver and passenger to come to an agreement on price, and then automatically charges the payment to the passenger and deposits it in the account of the driver.

Social media plays an increasingly critical role in scaling up the use of this technology by enabling people to be selective about whom they share rides with. Studies show that the primary reason that people do not ride share is because they do not want to be in a car with people they are not comfortable with. Social media services can act as a filter in the technology to get like-minded people to agree to be in a pool of potential ride sharers. Additional safety features such as a call-back feature can be added to ensure that the passenger or driver reached the destination safely.



Condition-based Megacity Traffic Management (COMET)

The World Economic Forum has been exploring the potential of technologies, data analytics and changing consumer behaviour to improve traffic flows and to better dovetail road traffic with public transport options, reducing travel times and safeguarding air quality within cities. Condition-based megacity traffic management (COMET) is one of several identified smart solutions that leverage data and new technologies.

COMET collects and analyses real-time information collected from sensors installed in infrastructure, vehicles and personal mobile phones for traffic and parking management through routing, mode shifts, tolling and access restrictions.

In China, COMET could be a solution for some cities, although the most important focus currently should be on integrated land use and transportation planning as cities are developing rapidly. Potential barriers to implementing COMET in Chinese cities include the disconnection and non-cooperation of different public authorities and a lack of standardization in how data is exchanged between stakeholders (infrastructure providers such as railways, transport operators such as bus and metro operators, and ticketing firms such as smart card operators). Specific actions to overcome barriers include public education programmes to highlight the potential benefits; clearer guidelines and laws on how data is exchanged between stakeholders; and starting with “light”, lower-cost technology in smaller and medium-sized cities, which would require less investment and smaller risks.



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Combating traffic congestion requires a holistic approach taking policy, planning, technology, legislation and cultural aspects into consideration, and needs to avoid developing conflicting incentives.

”

Ning Bin, President, Beijing Jiaotong University, People's Republic of China

Embracing Freight: A Smart City Imperative

Logistics are frequently pushed out of cities because of the traffic congestion and pollution attributed to delivery trucks. Ports, airports and freight centres increasingly have been moved to the outskirts of cities, and city policies continue to restrict the flows of delivery trucks.

Yet, restricting logistics does not solve the problem, particularly as demand increases for the products that trucks deliver. As part of smart city planning, some cities are now thinking about how to more effectively integrate and deal with freight and trucks, and finding ways to bring drivers, truck owners, companies and retail owners to collaborate to find new innovations.

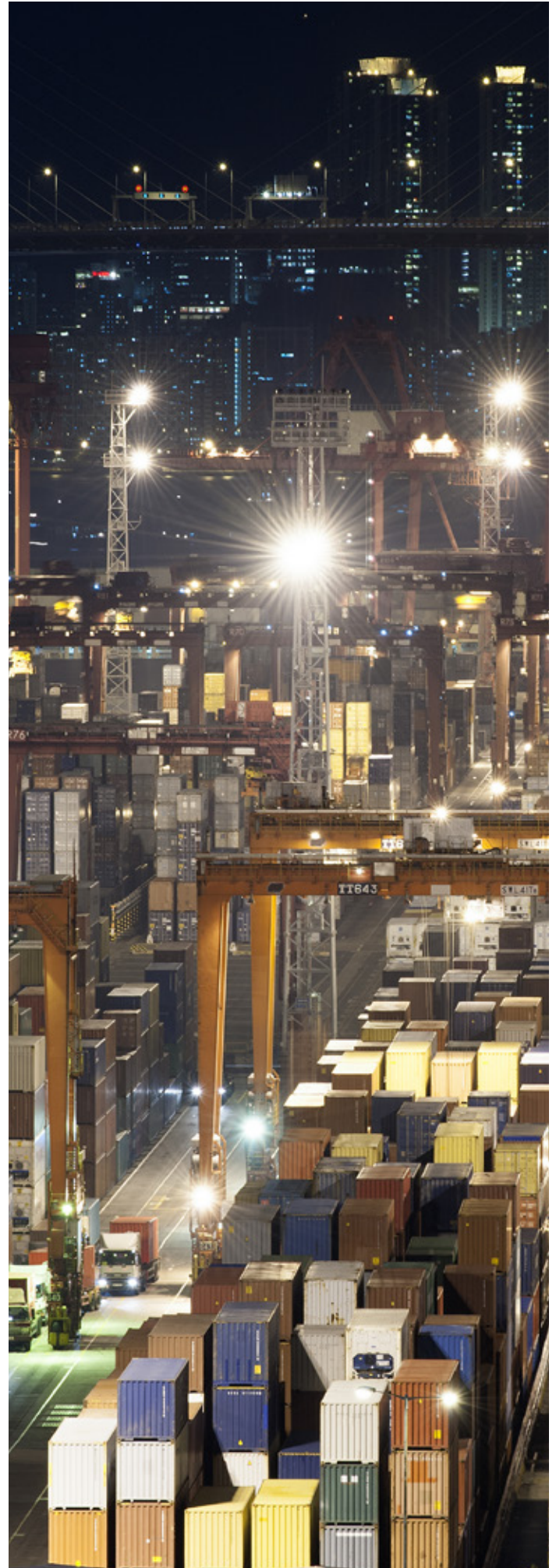
- Mexico City has a programme to collect and share data with the logistics industry (trucking, shipping, freight delivery, etc.). The logistics industry now accesses this data on a regular basis, and uses it to make decisions that help goods flow more efficiently through the city. The programme has enabled innovation in the sector and has changed the way that companies operate in the city.

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When you think about smart cities: you need to acknowledge that freight and boxes are part of the city. Roughly, for every person that moves in the city, you have one delivery per week.

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Edgar Blanco, Director, Research, MIT - Massachusetts Institute of Technology, USA





The Future of Urban Development Initiative

Beyond Discussion: Putting Sustainable and Smart City Concepts into Practice through the Future of the Urban Development Initiative

The Future of Urban Development is a multistakeholder initiative led by the World Economic Forum. The goal of the initiative is for Steering and Advisory Board members to work with senior officials and local stakeholders from select Champion Cities around the world to address urban challenges and accelerate the transition to smarter, more sustainable development models. The initiative involves a seven-step process in which the Champion Cities select one or two urban development goals and then work closely with the Steering and Advisory Boards to create strategies to achieve the goals and catalyze action.

Launched in 2012, the initiative has focused on equipping Chinese city leaders and relevant industry leaders with multistakeholder thinking as they strive to convert the challenges of rapid urbanization into opportunities for smart, sustainable growth. Tianjin, People's Republic of China, has served as the inaugural Champion City for the initiative beginning in 2012. Twenty local officials and stakeholders collaborated with over 50 members of the Steering and Advisory Boards through the seven-step process to create a six-point Tianjin Champion City strategy to address two of the city's major goals: combating traffic congestion and increasing the service sector. Multiple events held in Tianjin throughout 2012 helped further this process.

The "Accelerating Sustainable and Smart Cities" meeting played a critical role in advancing the impact of the Future of Urban Development Initiative. Approximately 40 Steering and Advisory Board members convened to maximize the initiative's impact in China. Highlights included:

- The Tianjin city government endorsed the six-point Champion City Strategy and discussed specific actions it has rolled out to implement it. Steering and Advisory Board members worked with the vice-mayor to brainstorm on a series of new urban challenges, including igniting the shift from coal to natural gas, conceptualizing how to become a smart city and scaling up city-university partnerships.
- Best practices and insights from the Tianjin Champion City Strategy were shared in eight private sessions with officials from the more than 60 cities that were participating in the event.
- The second phase of the initiative was launched, in which Steering and Advisory Board members will scale up the project by working with a new set of Chinese Champion Cities in 2013-2014. To begin this work, five candidate cities met in a private meeting with Steering and Advisory Board members to openly discuss their urban development ambitions and challenges that they hope to address through the seven-step process. Based on the input provided by the candidates, the Steering and Advisory Board members will select two or three new Champion Cities in mid-2013.



As the first Champion City of the Future of Urban Development Initiative, Tianjin highly appreciates the collective recommendations global experts developed. The project report has been shared with relevant government leaders in Tianjin and some relevant actions have already been taken... We welcome new cities to join the Future of Urban Development initiative and to promote sustainable urban development in China together with Tianjin.



Ren Xuefeng, Vice-Mayor of Tianjin, People's Republic of China



01: In front: Ren Xuefeng, Tianjin Municipal People's Government; Li Tie, China Center for Urban Development; Olivier Schwab, World Economic Forum. In back: Melanie Walker, Gates Foundation.



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I welcome global experts to work closely with me, bringing global experience into practice in Baoshan District to address the urbanization challenges we face and demonstrate the power of knowledge.

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Wang Hong, Mayor, Baoshan District, Shanghai, People's Republic of China



As of 2012, over 50% of the population called cities home in China. China has more than 657 cities, five of which qualify as “mega cities”, with populations greater than 10 million. More than 127 cities have over 1 million or more citizens. To put this in perspective, Europe has only 26 cities with over 1 million citizens and no cities with more than 10 million. Its largest metropolitan area, the greater city of London, has just over 8 million citizens.²



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(Endnotes)

¹ McKinsey Global Institute, Preparing for China's Urban Billion, 2009.
http://www.mckinsey.com/insights/urbanization/preparing_for_urban_billion_in_china

² Eurostat regional yearbook 2012: Focus on European Cities

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