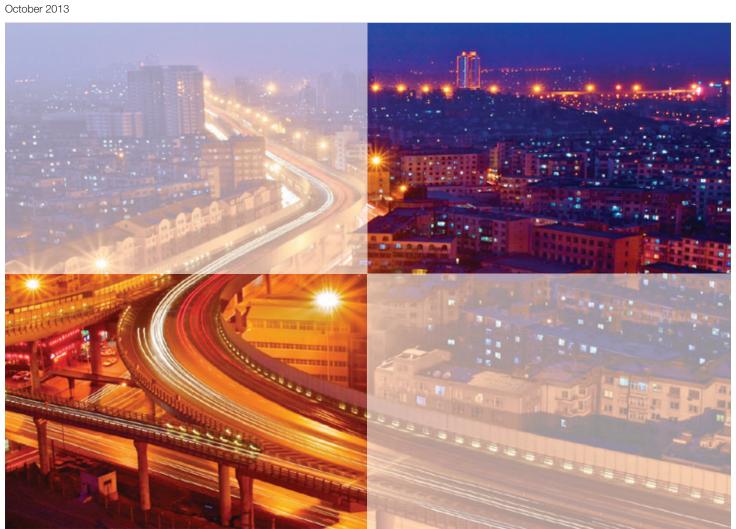




Urban Development & Infrastructure Summit

Dalian, People's Republic of China 11-13 September



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On the occasion of the sixth Summer Davos, industry leaders, experts, ministers and mayors from around the world convened in Dalian, People's Republic of China, for the third annual Urban Development & Infrastructure Summit. The event included a series of official and private discussions that explored how to optimize infrastructure assets and building stock over the long term; emerging trends shaping real estate markets across Asia; and innovative approaches to city design and development.

The summit also marked a milestone for the Future of Urban Development initiative, an ongoing initiative of the World Economic Forum that serves as a partner for cities around the world as they address challenges in transformation. The initiative aims to make innovation accessible to city leaders and businesses in a mutually beneficial setting. Following a successful pilot with the city of Tianjin from 2012 to 2013, the initiative kicked off work with two new Champion Cities in China – Dalian and Zhangjiakou. The two new cities will be the focus of the initiative in 2013 and 2014.

Participants reiterated that Asia's growing cities will need new forms of urban problem-solving. They recommended multistakeholder project management schemes to address this challenge, especially where governments are burdened with large development projects. Public-private partnerships in particular will help the industry deliver faster, more efficient and more sustainable results.

The real estate sector in Asia is holding strong due to strong government, a rising demand for greener projects in the built environment and strong innovation in the technology sector. Participants agreed that China's real estate bubble is not close to bursting, and highlighted opportunities in transport, environmental services and pollution mitigation on the horizon.

The Future of Emerging Trends in the Asian Real Estate Market: Highlights

Building on a series of meetings held in Washington DC (June 2012), New York City (October 2012) and Hong Kong (March 2013) to identify drivers of change in global real estate financial markets, this session explored and identified the drivers of change in real estate and financial markets in Asia.

Across Asia, real estate investors and developers are exploring a greater range of geographies and asset classes, and new models of developing Asian cities.

Emerging markets such as Indonesia, Malaysia and Thailand are becoming attractive alongside second- and thirdtier urban markets in China. Distressed markets in Japan and Australia are also gaining attention. Meanwhile, logistics, retail, mixed use, senior housing and long-term residential and commercial management investments are supplementing more conventional residential sales and commercial and industrial projects. Opportunities for exploring alternative capital and financing models and developing healthy and sustainable asset-backed securities markets were also discussed and debated.

Following bubbles in Japan and Europe, there is much speculation about Asian real estate markets, and China's in particular. While many think that the real estate bubble in China is close to bursting, others believe that there is still much room for growth. As urbanization continues in China, so does infrastructure and real estate growth.

Investing in Green and Smart Technologies

One of the opportunities for growth is in the productivity of commercial and office real estate, and technology will play a key role. This is true for new buildings and retrofits, where possible. Sometimes old buildings –



even those that were built a century ago – are better suited for upgraded technology than buildings that are just 20 or 30 years old. This is because higher ceilings allow room for elevated floors and more robust structures can support the additional weight of retrofits, sometimes not possible with cheaper, more recent buildings.

Buildings are becoming more productive through lowered energy and water consumption. The drive for sustainability means that people increasingly want to measure the performance of buildings and workplaces. Through technology in buildings, it is possible to show real returns on investment over time. Better measurement and advances in

technology can mean that many types of smart technology in buildings can pay for themselves within 12 months.

Changing Consumer Behaviour and Priorities

Demographic issues are contributing to real estate demand as populations age across Asia from Singapore to China. As the middle class continues to grow, people will be careful how they spend their money, but continue to buy homes due to cultural pressure. Buyers are more accepting of the fact that they will dwell in smaller, denser spaces. As family dynamics change, less space becomes more acceptable when balanced with increased mobility.





In fact, city landscapes that existed just | 20 years ago have all but disappeared. For example, in Beijing, the *hutongs* are all but gone, and in their place are high rises with a very different culture and living standard.

Aside from the returns on technology investment, there are additional benefits to be had. As markets grow and salaries increase, there is a new war for talent in Asia and infrastructure is becoming one of the battlegrounds. The push to attract best talent is then causing these tenants to relocate to premium real estate, and what was once a nice to have is turning into a must have, especially when it comes to green buildings. The pay-off is double – empirical evidence shows gains in productivity and top quality talent is available at the door.

Role of Government: Conflicts between Local and National Interests

Governments also contribute to the rise in real estate development. Interestingly, there are often conflicts of interest between local and national governments. As investment in traditional industries dries up, governments look towards land use fees and various forms of tax to drive up their revenues. Tax income from real estate development is often significant to local and regional governments, thereby pushing them to offer enticements for real estate development and driving prices up. Outside of China, many central governments would like to see property prices decline, but do not have enough control to influence them.

Government can also create demand for real estate, although not always with the best results. In Japan, for example, real estate prices in central Tokyo increased tenfold in just five years starting in 1985. This was in part due to government demand for office space, which turned out to be overestimated. After the bubble, things balanced out, but it took nearly 20 years. Now, the ratio of office to housing is more balanced and there are clusters of office and commercial real estate around transport hubs, such as train stations.



It is not just technology that is pushing new markets, but economics as well. Participants discussed why real estate markets survive despite longstanding low yields. In the US over the past 150 years, for example, real estate has not outperformed inflation. The same is true in Amsterdam over the last 300 years. So why do real estate investments continue in Asia despite a 1.5%-2.5% yield?

Behavioural economics is largely to blame. In much of Asia, low equity investment yields push investors into real estate. Although it is possible to put away US\$ 5,000 in Singapore with a 5% return, people continue to speculate that next year's real estate growth will be higher. Evidence disproves this, however, as over a 10-year period, only half returned real estate growth rates over 6%.



Optimizing the Future of Infrastructure and Buildings: Highlights

Over the past decade, emerging economies have built public infrastructure, real estate and cities on an unprecedented scale. While such development has fuelled economic growth and enhanced competitiveness in the short term, the long-term challenge will be to operate, maintain and maximize the efficiency of the infrastructure and building stock.

Participants in this session explored best practices in managing public infrastructure and privately owned buildings to ensure maximum utility, quality, safety and the efficient use of natural resources over the long term.

Participants shared examples of how:

- Governments can take action by planning and shifting focus from construction to operations
- Common issues of financing and capability can be addressed
- Engineering and construction companies can develop operational and maintenance competencies and work effectively with government to manage publicly owned infrastructure assets

Role of Government: Infrastructure and Construction

Asian governments are relatively traditional when it comes to the infrastructure and construction sectors, as the public sector usually finances the construction of large infrastructure projects and then transfers them to the private sector for operation. However, they are quick to realize that the typical pattern of build-operate-transfer does not always work, as the public sector is often too big or unreliable. In addition, financing institutions diverge from participating in the construction phase to focus on operational stages. This is particularly the case for Japanese and Chinese local and central governments.

One of the top priorities of the Japanese government is reviving the country's economy. Both local and central governments are striving to further collaborate with the private sector in building infrastructure to provide flexibility, optimize efficiency and deal with emerging challenges. This is particularly applicable for tsunami recovery and redevelopment projects (e.g. the privatization of the Sendai Airport). In the future, with emerging challenges such as climate change, the public sector must invite private players into the design, construction, operation and maintenance of infrastructure projects.

In China, the demand on financing the infrastructure and building activities is increasingly exerting pressure on local and central governments. The public sector still dominates as the source of financing of most infrastructure projects in the form of bank loans and bonds (in the case of the Ministry of Rail), As the government is largely in debt, it is expected that no more such bonds will be available in the future. The challenge for the Chinese government is to enhance the interactions and trade-offs with local and international private sectors to efficiently mobilize the financial resources needed for large-scale infrastructure and building projects.

The Promise of the Private Sector

In parallel, private companies are increasingly investing in new building technologies. For example, Toshiba's innovations in that field are categorized into single building technologies and cluster building solutions. For single building solutions, resilience is key for new buildings to save energy and survive extreme events. New technologies at Toshiba focus on energy efficiency, which could amount to 37% energy saving through technological advancements for buildings. Recently, pilot projects for six buildings had 20% energy saving rates in both summer and winter.

For cluster buildings, the main goal is to collectively maximize efficiency. In this area, cloud computing and data analytics play a critical role in helping building managers understand the energy performance of multiple buildings and compare their findings with the historical data of the building and other cross-building benchmarks. Feedback can then be sought so that patterns and insights could be developed to further improve the performance of these cluster buildings.



Financing Trends and Trajectories

Given the pressing challenges the public sector in Asia is facing, and with the private sector's growing interest in promoting innovative ideas in the fields of infrastructure and building, governments need to allow for more involvement of private companies in the construction phase of large infrastructure projects. This will alleviate governmental control and increase the efficiency of the entire process. Participants generated a set of recommendations that Asian governments - both central and local - could consider to respond to the challenges in these fields. Generally, public-private partnerships are of high importance in infrastructure as they accelerate construction, operation and the performance of infrastructure projects.

These recommenations include:

- Public sector could become a platform for project management.
 The private sector takes on the project via a classic build-operate-transfer scheme. After the transfer, the government could lease the project to another private company for operation and maintenance.
 Using this model, overall efficiency is improved and the financing institutions become more interested in providing funding for the construction phase of the project.
- Governments could pilot the portfolio approach, where multiple small projects are packaged by the public sector and managed by a single developer. This would reduce risks for the developers and these small projects could not have been developed if taken alone.
- In smaller cities, local governments could provide incentives for developers of large infrastructure projects. After completion of the project, the government would be able to pay the developer back since property value would probably have accrued.







Future of Urban Development Initiative: Official Kick-off with the 2013-2014 Champion Cities: Dalian and Zhangjiakou

The World Economic Forum's Future of Urban Development initiative aims to serve as a partner for cities as they address major challenges in transformation and accelerate the transition to innovative urban development models. Launched in 2012, the initiative is focusing on China in its initial phase, beginning with the inaugural Champion City of Tianjin. Through a comprehensive seven-step model, the World Economic Forum and core partners, including the China Center for Urban Development and the World Bank, engaged global and local experts, industry leaders and officials to brainstorm on Tianjin's specific challenges and catalyse multistakeholder action to address them

Following early indicators of success of the seven-step model in Tianjin, the initiative is now scaling-up to work with two additional Chinese cities in 2013-2014: Dalian and Zhangjiakou. This private session during the Annual Meeting of the New Champions kicked off work with these Champion Cities by convening senior officials from each to share their key challenges and plan the roadmap for engagement in the coming year.

Success Story in Tianjin – Lessons Learned

As the inaugural Champion City of the Future of Urban Development Initiative, Tianjin has been working in close collaboration with the World Economic Forum since 2012 to spearhead its development towards a greener and more service-oriented economy. The recommendations of the Forum have been taken into consideration by the local government of Tianjin, which, in return, will share the accomplishments of the seven-step model at the next Annual Meeting of the New Champions hosted in Tianjin in 2014.



Dalian and Zhangjiakou – New Challenges and Opportunities

Tianjin proved that the seven-step model could be replicated at other scales and applied to cities presenting different challenges and opportunities. The expansion of the Champion City targets two transitioning cities: Dalian and Zhangjiakou. The initiative may select a city from western China as another Champion City.

Although both face rapid urbanization, Dalian and Zhangjiakou present different challenges and provide myriad opportunities for the seven-step model in terms of economy, transportation and sustainability.

Dalian

As the gateway of north-east China to the outside world, Dalian has a population of nearly 6 million, covers an area of 12,000 square kilometres and boasts a long coastline. The city is also an international shipping hub and a regional economic centre.

As a Champion City, Dalian expects experts to provide recommendations on economic development and transition to address its most pressing urbanization challenges:

- Urban transportation: The city has more than 500,000 vehicles, which have generated considerable pressure on the city's transportation system. While guiding traffic to the northern part of the city, Dalian also aims to build a comprehensive transportation system and regionally integrate its transportation systems. The city also wants to balance the development between north and south in the future.
- Green development: Last year, Dalian formulated a plan to green its economy, which is supported by 10 dominant industries that are not large or competitive enough. The two largest industries are the petrochemical (with a refining capacity of 30 million tons) and equipment manufacturing industries (like ships, machine tools, locomotive parts and other large equipment). The city needs guidance and support in terms of developing strategic emerging industries and greening its traditional industries. Dalian has set a goal of creating a development framework for a green economy and becoming a leader in northeast China. By 2020, Dalian aims to be recognized as a model of green development under the support of its innovation system, with its industrial development at the forefront in China.



Energy: Coal remains the major source of energy for the city, whose clean energy sector has yet to be developed; and its renewable energy sector is too small within the energy industry. In the future, Dalian will scale up efforts to develop new energy (such as offshore wind and solar energy) and clean energy technologies like cogeneration. Moreover, Dalian will promote gasfired power generation, cooling and heating, substitute gas for coal and accelerate the construction of gas pipelines and port to expand the use of LNG.

Zhangjiakou

Compared with Tianjin and Dalian, Zhangjiakou is a small city that covers an area of 37,000 square kilometres, home to a population of 4.6 million. It is around 180 kilometres away from Beijing and serves as a gateway to north-west China. The city boasts a hefty stock of arable land, minerals and renewable energy (wind power). In the future, Zhangjiakou will focus on development of industries such as tourism, new energy, food processing, equipment manufacturing and electronics.

As a Champion City, Zhangjiakou expects experts to provide recommendations on economic development and transition to address its most pressing urbanization challenges.

Urban Transportation: With trunk railway lines and expressways traversing the city as well as an airport in operation, a high-speed railway will be constructed in the second half 2014, which will shorten the distance between the city and Beijing to 40 minutes. However, the city still needs to address traffic congestion on expressways at a time of growing ownership of vehicles.

Green Development: The ecological environment of Zhangjiakou is favourable for green and sustainable development as well as for economic transition. As the quality of its air and water has a direct effect on Beijing, the city is relocating its old industries and encouraging farmers to convert farmland into forests. Ecological and industrial development should therefore grow hand-in-hand. Rural-urban development should also be more

balanced with the growth of countrybased businesses in a vast area where a large number of farmers have migrated to cities as workers.

Energy: The city should take advantage of the potential of its enormous reserve of new energy and develop it into a well-established industry; currently, the city finds it challenging to turn it into consumable power.

Expected Recommendations and Trajectories for Dalian and Zhangjiakou

The traffic congestion faced by Zhangjiakou and Dalian has different dimensions: the traffic problem for Zhangjiakou is intercity congestion that mostly takes place on the expressways leading to Beijing. In the foreseeable future when Zhangjiakou and Beijing are connected by a high-speed railway, Zhangjiakou will become a logistical hub for Beijing. Zhangjiakou could set an inspiring example for the world in terms of how to address the conflict between the flow of goods and people. By contrast, Dalian's traffic problem is an example of typical intracity congestion that can be solved through smart technologies and other means.

In terms of green industries, both Zhangjiakou and Dalian promise to





be an ideal R&D destination. The two cities could consider going beyond manufacturing to attract R&D centres to boost industrial development.

The role of SMEs and innovation should be enhanced to develop green industries. Green energy includes clean energy, but energy production (a closed-loop energy system) and efficiency improvement within a city are equally important.

Development of green industries should be balanced with existing industries. For example, there is already a well-established petrochemical industry in Dalian. While greening its industries, cities must take account of the development momentum of their existing industries, which is a typical issue that involves a trade-off.

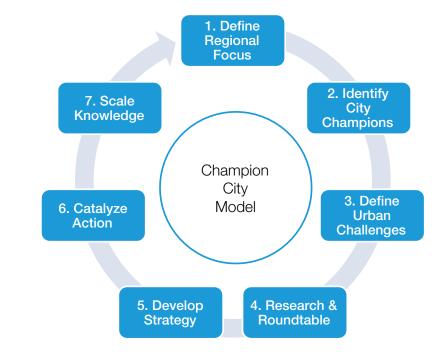
The result of work on the Champion City this year is the introduction of strategic recommendations to address the three challenges of urbanization. The recommendations need to cover two dimensions:

- Technically, what domestic/ international best practices, technologies and solutions are instrumental in solving urban issues?
- 2. Institutionally, what policies should governments introduce to create an environment to catalyse the development of relevant industries and businesses?

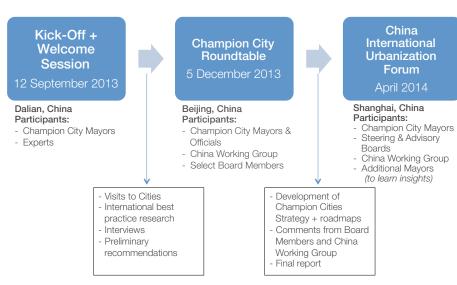
The two dimensions are equally important, and the practices that combine these two dimensions will make them more scalable and replicable in Chinese cities. If such practices are solely based on international experience, they may not be easily implemented. This merits more attention in subsequent work.

Real Estate Session

The Seven-step Process: A New Model for Urban Problem-solving



2013 – 2014 Timeline → Save the dates!



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