WORLD ECONOMIC FORUM

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The Future of Urban Development Initiative: Tianjin Champion City Strategy

In collaboration with Accenture

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Foreword

Ren Xuefeng
Vice-Mayor of Tianjin

Tianjin has emerged as one of the most dynamic cities in China. The Future of Urban Development Initiative has provided a genuinely innovative platform for Tianjin, the World Economic Forum, global experts and industry leaders to jointly develop strategies and solutions as our city addresses the opportunities and goals that accompany this growth.

Working within the Future of Urban Development project model has given Tianjin an opportunity to share its ongoing efforts in urban planning with a global audience, as well as gain new insights. Productive sessions at the Tianjin Roundtable, and later at the Annual Meeting of the New Champions, facilitated knowledge exchange between local and regional experts and leaders from the private sector and civil society. Through this collaboration, Tianjin and the Future of Urban Development Initiative have gathered new insights and discussed ways to catalyse action in 2013.

Tianjin is pleased to have served as the inaugural city for the initiative, and takes pride that the collaborative work between Tianjin, the World Economic Forum, and the Steering and Advisory Boards of the Future of Urban Development Initiative will serve as a scalable and replicable model for other cities around the world. We look forward to continuing to be deeply engaged in this initiative as it offers a promising new way for problem-solving in cities.

Sincerely,

Li Tie
Director-General,
China Center for
Urban Development

China's urbanization level had reached 51.27% by 2011, with 690 million of its population living in urban areas. Such large urban population has posed serious challenges not only to China, but also to the world. It is thus crucial for China to identify its development patterns and concepts. In this regard, the World Economic Forum has played a champion role in supporting the strategic transformation of Chinese cities by implementing the Future of Urban Development Initiative in collaboration with Tianjin.

Despite its accelerated urbanization, China's services sector is lagging behind the world average. Tianjin is no exception. This problem has resulted in environmental degradation, inefficient land use and inadequate services sector job opportunities. Concerning urban transportation, excessive attention has been paid to its road networks rather than increasing the capacity of comprehensive transportation management and public transit. This has caused serious congestion, a difficult problem to solve in its urban administration.

At the Tianjin Roundtable, world renowned experts on urban development and representatives from transnational corporations were invited to provide advice on the development of the services sector and urban transportation of Tianjin by introducing international best practices. They made strategic recommendations for Tianjin's future development, on which this report is based. I believe that this international wisdom is of significance to China's urbanization and urban development as a whole.

The China Center for Urban Development will continue to deepen its cooperation with the initiative by co-organizing the annual meeting, China International Urbanization Forum, in Shanghai from 2013. The cooperation model will enable the Forum to play a better role as a platform for urban development in China.

Sincerely,

Michael Kwok
Director, Arup China

Arup is very pleased to contribute to the initiative as the Project Champion. Tianjin is one of fastest-growing cities in China, and the pace and scale of growth have also brought issues and challenges to the city's long-term development. I am particularly impressed by the openness and insightful views offered by the global experts, industry leaders and local collaborators, and together we came up with strategic recommendations to address the urban goals of Tianjin. We believe these recommendations, comprised of both near-term and long-term strategies, provide a good base for implementation as we move from vision to action.

Executive Summary

Tianjin, People's Republic of China, was selected as the inaugural Champion City of the World Economic Forum's Future of Urban Development Initiative in January 2012. As the inaugural city, Tianjin gained access to a multistakeholder group of global industry leaders and experts to collaboratively strategize on the city's specific urban challenges and goals, and to catalyse action through a seven-step project action model. The city selected two goals to address through this approach: tackling traffic congestion and growing its services sector. This report captures the six strategic recommendations for Tianjin that resulted from this collaborative process. Further, it outlines a path to implementation supported by the industry leaders and experts involved.

Tianjin has emerged as an economic powerhouse in both Asia and the world. Yet, the city's long-term growth potential hinges on its ability to address growing traffic congestion and sharpen its competitive edge with a vibrant and balanced economic base of manufacturing and services sectors. Based on the main challenges and opportunities that were identified, six strategic recommendations are outlined as follows:

Urban Goal	*Strategic Recommendation*
Address Traffic Congestion	1. Expand the Intelligent Transportation System (ITS) 2. Integrate land-use and transport planning 3. Optimize performance of public transportation
Grow Service Sector	4. Build the Tianjin brand 5. Incubate and support the growth of SMEs 6. Work with universities to establish service industry-based curricula

To address congestion, a two-pronged approach is recommended: long-term strategies such as land-use planning policies that promote concentrated, pedestrian and transit-oriented development, as well as near-term strategies to more efficiently use existing roadways and public transit assets. To develop a balanced economy, the city can grow the service economy in areas where competitive advantages lie, including building on its manufacturing base as a platform for high-tech innovation clusters; using available high-quality infrastructure to develop a logistics-services sector; leveraging academic institutions; and fostering the growth of small and medium-sized enterprises.

In addition to the recommendations, the Future of Urban Development process provides Tianjin with two starting points for implementation. First, this report outlines a pathway for implementation. Second, Tianjin has at its disposal a committed community of steering and advisory board members and local stakeholders who have been engaged through the seven-step project action model. This community has agreed to support implementation through a multistakeholder framework. Thus, Tianjin is poised to leverage the momentum and the community enabled through the Future of Urban Development Initiative to catalyse action. In taking action, the city is poised to serve as a model for cities in China and across the world.

Tianjin by the Numbers

¥1119

GDP in 2011 (US$ 117 billion)

9 planned subway lines

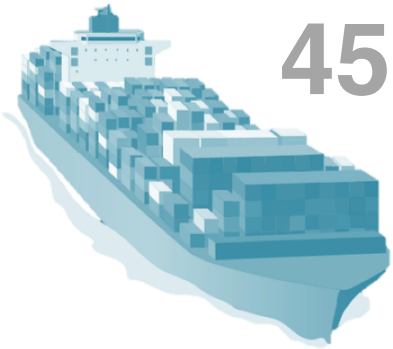
239

number of higher education institutions

12.9 million

and growing by 500,000 each year

2009 population



450 million

tonnes of cargo handled by the port in 2011

3 million

number of vehicles on the roads by 2015, up from 2 million in 2012

About Tianjin

Located just two hours west of Beijing by car and 30 minutes by high-speed rail, Tianjin is among the fastest-growing cities in China in terms of population and economy. It has a population of 12.9 million[1] and is expected to grow by 500,000 a year.[2] The city's GDP per capita surpasses many countries such as Russia and Brazil.[3] In 2011, Tianjin's GDP was 1,119 billion CNY (US$ 177 billion) with a year-over-year increase of 16%.[4]

Central to Tianjin's growth is its relationship to the Bohai Sea and its proximity to Beijing. As of 2010, Tianjin's seaport was the world's sixth-largest port by throughput tonnage, and the 11th in container throughput.[5] The Tianjin Port serves as the main maritime gateway to Beijing and trades with more than 600 ports in 180 countries around the world, helping to secure the city's development as a leading manufacturing hub for China.[6] Within the city, the manufacturing sector is the largest (54.8%) and fastest-growing (18.2%) sector of the city's economy[7] and, within China, Tianjin's GDP ranks fifth among Chinese cities in Q1 of 2012.[8] Beijing has also been central to Tianjin's development as a manufacturing and industrial centre. Beijing's transition to a service-based economy over the past decades led to the relocation of manufacturing to surrounding areas, including Tianjin.

As it has grown, Tianjin has invested significantly in local and regional infrastructure, economic development and the creation of the Binhai New Area, a coastal, industrial special economic zone. The city has expanded the capacity of its airport and seaport, built a high-speed rail to Beijing and developed a network of 11 high-speed expressways. The city has developed an underground metro system with a planned expansion of nine additional lines, and is developing a fleet of low-carbon buses.[9] Enabling factors such as Tianjin's market-oriented policies, competitive land and labour costs as well as preferential tax policies created a magnet for multinational companies that, in turn, made sizeable investments in the manufacturing and services sectors.

Today, Tianjin is no longer in the shadow of Beijing, but a rising powerhouse in its own right. The Binhai New Area is the centre point for the city's economic growth, contributing to more than half of Tianjin's GDP.[10] Students graduating from Tianjin's 239 higher education institutions work in Binhai,[11] which is home to over 285 Fortune Global 500 companies and the port. The Tianjin Economic-Technological Development Area or TEDA in Binhai has emerged as one of the fastest-growing zones in Binhai and is home to Motorola, Samsung Group, Honeywell and Panasonic.[12]

Introduction

As the inaugural Champion City for the World Economic Forum Future of Urban Development Initiative, the city of Tianjin's leaders and stakeholders worked hand-in-hand with a global, multistakeholder group of industry leaders and experts in 2012 to jointly strategize on the city's major urban development goals through a seven-step Champion City Action Model (see Figure 1). As the first step, the city selected two goals to explore from this new approach to urban problem solving: addressing traffic congestion and growing the services sector. *The Tianjin City Champion Strategy Report* serves as a milestone of this process. The report provides six strategic recommendations for Tianjin based on the multistakeholder project action model; and it outlines a path to implementation. Further, it serves as a launch pad for the city to catalyse action with steering and advisory board members and local stakeholders engaged in the project through a multistakeholder framework.

Over the past three decades, rapid population growth and economic development fuelled by manufacturing and port activities have transformed Tianjin into a bustling metropolis approaching 13 million inhabitants with double-digit GDP growth.[13] Unfortunately, this growth has been accompanied by some challenges, including traffic congestion, which has been exacerbated by sprawling land development patterns; a rapid rise in personal automobile ownership; and growing consumer demands. Automobile ownership in Tianjin has increased 10%-15% in the last two decades, outpacing the city's 3% increase in road infrastructure.

With road intensity forecast to double between 2010 and 2015[14], the solution to Tianjin's traffic congestion must go beyond just building hard infrastructure. Maximizing the performance of the public transportation system and road networks and integrating land use and transportation planning are critical to Tianjin's continued growth and competitiveness. In addition to causing pollution and safety hazards, traffic congestion poses threats to the quality of life and economy in Tianjin as research shows that urban congestion can contribute between 4% and 7% loss in GDP.[15]

Congestion aside, Tianjin has a robust economy, known for its strength in manufacturing and industry. To complement these strengths, the city wishes to cultivate the services sector including logistics, finance and other types. Tianjin's services sector now comprises 46% of the city's economy, primarily in the wholesale, retail, transportation, finance and real estate industries.[16] To achieve this goal, targeted strategies are needed to further develop the city as an attractive place that caters to a service-oriented workforce; showcase the city's hospitality to the service industry; and grow the city's economy in areas where Tianjin appears to have natural competitive advantages. Such advantages include building on the strong manufacturing base as a platform for high-tech innovation clusters; using the high-quality physical infrastructure in the city to develop a logistics-services sector; and leveraging the high number of academic institutions.

Tianjin's long-term growth potential hinges on its ability to both address traffic congestion as well as harness its competitive edge through developing and maintaining a balanced and vibrant economic base. In a constantly changing, dynamic and competitive world, Tianjin's imperative must be to maintain global relevance. The forces of globalization and outsourcing have created fierce competition for services both regionally and internationally, which presents Tianjin with challenges as well as opportunities.

Tianjin's story of rapid urbanization and economic growth reflects a wider trend of urban change in the world. The growing pains that the city is experiencing and the goals that it has developed as a result are not uncommon for fast-growing cities in many regions of the world. The selection of Tianjin as the inaugural Champion City for the Future of Urban Development Initiative, the recommendations presented in this report and the project approach are intended to provide a relevant knowledge base for other cities in Asia and elsewhere to build upon.

Methodology for Working with Tianjin, the Inaugural Champion City

The strategic recommendations for Tianjin are a result of the collaboration between the World Economic Forum, Tianjin Municipal People's Government, the China Center for Urban Development, local and regional stakeholders and steering and advisory board members of the Future of Urban Development Initiative. They were derived through the initiative's seven-step Champion City Action Model (see Figure 1).

The process began with interviews of approximately 50 global experts to gain an understanding of best practices in addressing traffic congestion and building a service economy. These best practices were then debated for their applicability to Tianjin at the Tianjin Roundtable on 20-21 June 2012, co-organized by the China Center for Urban Development, the Tianjin Municipal People's Government and the World Economic Forum. The Roundtable convened 25 international experts from 10 countries and 20 government officials, regional and local stakeholders. It resulted in approximately 30 unique recommendations.

These recommendations were then judged against the following criteria:

1. Ability to implement in the near term
2. Track record of success in other cities
3. Perceived feasibility in the Tianjin context
4. Alignment with social, economic and environmental sustainability

This process resulted in six strategic recommendations, which were finalized by the steering board and Tianjin officials at the World Economic Forum's Annual Meeting of the New Champions 2012 on 13 September.

Complementing the process, Accenture worked in collaboration with the World Economic Forum as Project Adviser, helping to build and execute the process. As Project Champion, Arup China provided subject matter expertise to provide depth to the strategic recommendations.

01: Board members and Tianjin offcials convene on 13 September 2012

02: Board members meet with local stakeholders at the Tianjn Roundtable

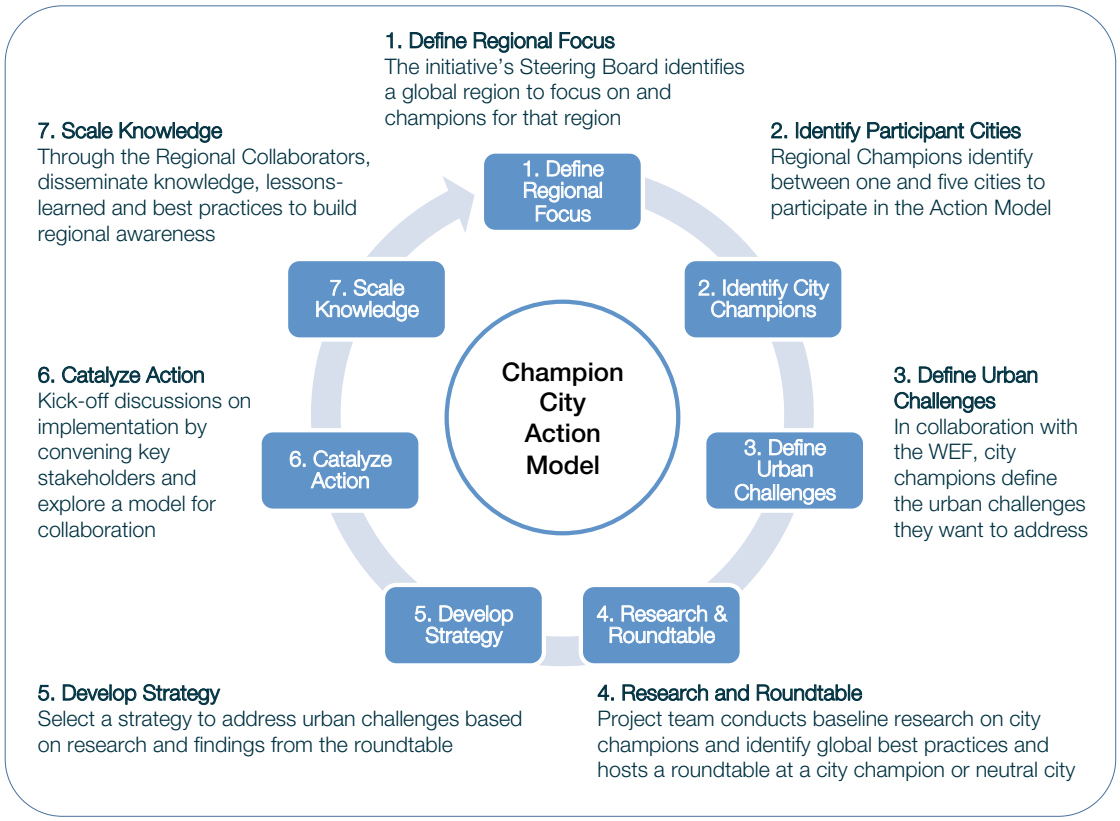
03: Experts convene at the Tianjin Roundtable on 21 June 2012

The Future of Urban Development

The Future of Urban Development Initiative aims to serve as a partner in transformation for cities around the world as they address major urban challenges and to accelerate the transition to innovative urban development models. The core activity of the initiative is for the multistakeholder steering and advisory boards to work hand-in-hand with select Champion cities and local and regional stakeholders to strategize on specific goals or challenges outlined by the cities themselves.

Figure 1: The Future of Urban Development Initiative Process

A seven-step process guides interaction between cities, experts, stakeholders and industry leaders.



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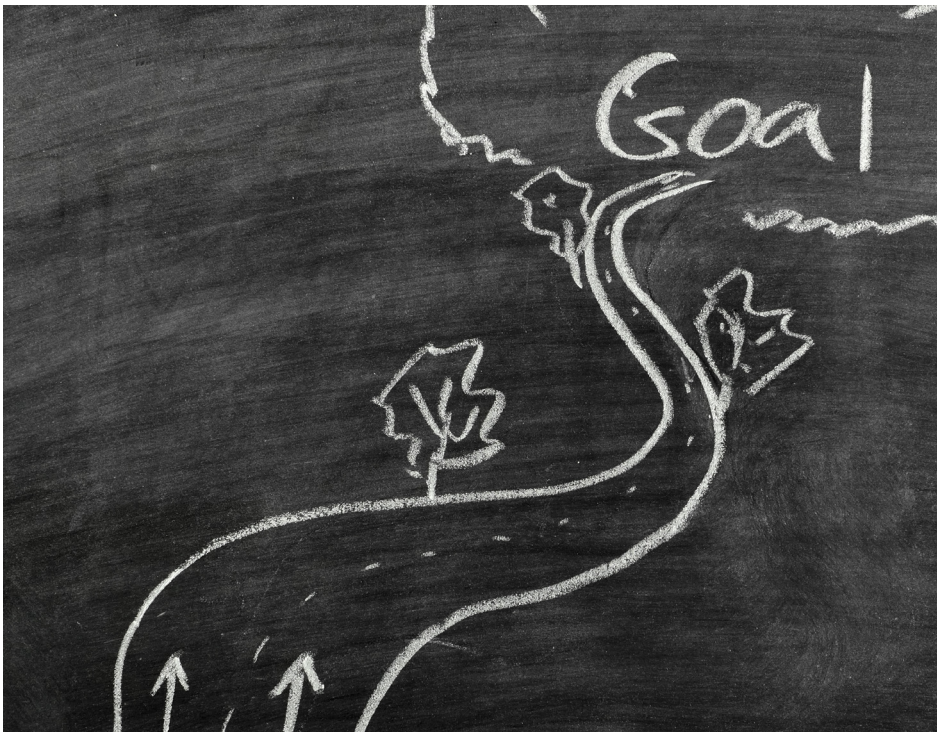
- Skanska AB
- Toshiba
- Urban Land Institute
- Welspun Energy
- World Bank

A full list of Steering and Advisory Board members can be found in the Contributors section in the back of the report

Strategic Recommendations

The recommendations concentrate on five near-term, high-impact areas to address traffic congestion and grow the service economy, complemented by one long-term recommendation to integrate land-use and transport planning. Taking this approach has advantages: demonstrable quick gains can help build momentum, engage stakeholders and make immediate gains; at the same, the city can put in place the building blocks that are necessary for longer term urban and economic planning strategies.



Recommendations to Address Traffic Congestion

The three recommendations to address traffic congestion focus on opportunities that Tianjin has to better manage existing roadway and public transit assets, and to plan future development in a way that will make public transportation a more viable, accessible and attractive option for its citizens. These recommendations are intended to complement and maximize the efficiency of Tianjin's impressive supply-side investments: the city is investing significantly in road infrastructures with an aim to increase the road area ratio from 6.85% in 2004 to 20% by 2020.[17] It is also planning to expand its metro from one to nine lines, and investing in a low-carbon bus fleet. Maximizing efficiency of these investments through performance management will not only reduce congestion, but could also reduce the need for additional capital investment in the future.

1. Expand Intelligent Transportation Systems

Intelligent transportation systems (ITS) encompass a broad range of information, communications and technology applications to reduce traffic congestion and carbon emissions and improve mobility and safety. ITS refers to a broad set of applications ranging from hardware solutions, such as sensors and video monitors installed in a city's infrastructure or in personal vehicles, to solutions that collect data from mobile phone networks and users. Regardless of the type of application, the systems enable real-time traffic management service, allowing traffic agencies and vehicle drivers to be better informed about road conditions and, therefore, make safer, smarter choices that improve the overall efficiency of the road network. When planned properly, ITS can eliminate the need to build new road infrastructure by optimizing the capacity of the existing road network.

In 2012, China's Ministry of Transportation unveiled a national plan to promote the development of the country's intelligent transportation systems, underscoring the importance of using technology to address congestion in China. The ministry also announced that it would encourage more private investment in the field.[18]

Within this supportive national context, Tianjin has the opportunity to greatly expand its initial ITS investments, including the new electronic tolling system on the Beijing-Tianjin-Tanggu expressway, to become a leader in this area in China. More importantly, the development of robust ITS systems is a critical step towards addressing Tianjin's traffic congestion issues through a demand-management approach. Currently, the growth rate of traffic in Tianjin is four times higher than the pace of road construction, and the number of vehicles is predicted to reach 3 million by 2015, almost doubling the number in 2010.[19]

With the number of personal vehicles on the roads increasing every year, actions that make better use of the existing road network are not only an imperative part of the solution to congestion, but also provide a faster and likely less-costly alternative to the continual expansion of the road network. The ITS network could complement the significant investments Tianjin has already made on the supply-side, including roads and expressways.

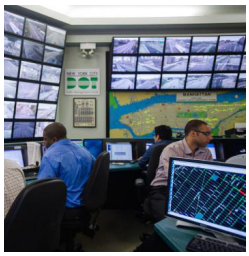
Tianjin can consider a package of ITS applications to best meet its needs based on local conditions. Applications that may be particularly effective for Tianjin include:

- Adaptive traffic signal control systems, as well as automatic speed enforcement and parking guidance systems through the use of various vehicle detection technologies
- Communication of traffic data to allow motorists to make more informed decisions such as route, mode choice and schedule through the use of variable message signs, highway advisory radio systems and integrated on-board navigation and information systems
- Integration of sensing and control technologies in vehicles for adaptive cruise control, collision warning systems and driverless cars
- Transponders, electronic licence plates and "smart cards" to enable electronic high-speed toll collection, congestion pricing and truck weigh-in-motion
- Use of telematics or global positioning systems (GPS) to assist fleet managers in allocating and tracking resources more efficiently[20]

Various applications and ITS packages will imply different levels of upfront investments and returns on investment time horizons, with advantages and disadvantages. For example, the collecting of cellular data (from mobile phones in vehicles) on traffic flows is easy to implement at a relatively low cost to the city, but has increased implications for privacy. The use of social media to communicate information to motorists is a quick win and easily implemented at a low cost. For example, the Qingdao traffic police currently use a twitter-like service to communicate real-time traffic information to motorists. Another example is the use of mobile apps to facilitate carpooling and ride-sharing. Some of these solutions are user-generated – meaning citizens themselves develop helpful mobile applications. Tianjin can look for ways to support these activities.

To implement ITS in Tianjin, it is recommended that Tianjin consider working with the private sector to design, develop and possibly manage a package of solutions that would fall under a broader Tianjin Intelligent Transportation System. This can be achieved by partnering or collaborating with companies that can propose innovative solutions and pilot projects in the city.

Case Studies



New York City Launches "Midtown in Motion" Congestion Management System

In 2011, New York City implemented a congestion management system to improve traffic conditions in Midtown to enable city traffic engineers to identify and respond to traffic conditions in real time. By installing 100 microwave sensors, 32 traffic video cameras and E-ZPass readers at 23 intersections in a 110-block area, city traffic engineers are able to measure traffic volumes, congestion and record vehicle travel times. The system allows for quick identification of congestion choke points as they occur and adjustment of traffic signal patterns to clear traffic jams remotely. The real-time traffic flow information will be made available to motorists and to app developers for use on PDAs and smart phones.[21]

Japan Launches First Vehicle Information and Communications System (VICS)

The world's first in-vehicle system provides up-to-the-minute, in-vehicle traffic information through a navigation system; 81% of users consider it "essential" and travel time has been reduced by up to 20%. Information collected through vehicle sensors, traffic cameras and traffic reports is processed and digitized before it is sent to vehicles' in-unit navigation systems. The system is run by a public-private partnership and operates with no government funding, relying instead on a consortium of 90 companies involved in car and vehicle electronic equipment manufacturing. The system has been a huge success: 81% of VICS customers rate the system as essential, and research has shown that VICS reduces travel time by up to 20%.[22]

2. Integrate Land Use and Transport Planning

Urban activities are inextricably linked to mobility and the ability to enable people and goods to flow efficiently through a city's urban fabric. While road networks and public transportation systems are essential components to enable urban mobility, their effectiveness is limited to the degree that they work in harmony with land use policies. If land use policies allow for sprawling residential or commercial development that lacks easy access to a comprehensive public transportation network, residents and workers will tend to choose to use personal automobiles if they can afford it, exacerbating traffic congestion issues. The reverse is also true : congestion tends to worsen if transportation policies and plans are not proactively coordinated with land use plans.

Tianjin's spatial form has changed significantly through targeted measures in response to dynamic economic and population growth. For example, the Tianjin Spatial Development Strategy Plan (2008) has guided the transformation of Tianjin from a single-core city to a multi-core city, including the old city centre district and the Binhai New District.[23] This transformation has reorganized and extended city functions and resources. In the midst of this transformation, the public transit network has become misaligned with the locations of social infrastructure and city amenities and with zoning arrangements. For example, commuting to school accounts for 20% of total trip purpose, of which only 5.6% commute by bus.[24] A thorough review of Tianjin's complex transport system to support the changing city form is therefore essential.

Integrated planning requires ongoing, close collaboration among all of the different transportation and land development agencies to ensure that roads, buses, metro investments, real estate projects and development policies work in harmony with the goal of promoting public transportation ridership.

Three concrete actions are recommended in the spirit of integrated transportation and land use planning:

1. Establish a process for all departments relating to land use and transportation to work together on a continual basis. This may require not only technical change, but also institutional reformation. The best outcomes occur when planning and transport departments form a common vision and have systems in place to share data and information.
2. Promote transit-oriented development nodes and combine rail transit development with property development.[25] Transit-oriented development (TOD) is a strategy that encourages high-density building around major public transit nodes (bus, metro and light rail stations) whereby residents and workers can safely and easily access the public transit within an approximate 10-minute walk. The success of TOD can be enhanced by limiting parking around the transit stations and by providing good urban design around transit stops that includes retail, restaurants, bicycle parking and a pleasant streetscape. Such amenities enable residents and workers to feel safe because they create a vibrant, well-lit atmosphere.

   TOD can be encouraged through proactive development policies that mandate or incentivize high-density development around public transit stations. For example, cities sometimes offer fast-track permitting or higher allowable building heights to real estate developers who build around public transit stations. Cities can also offer special benefits to residents and workers in TOD nodes, such as discounted metro cards.

   In some cases, TOD can provide a source of revenue and creative finance for cities when rail transit development is combined with property development. Hong Kong is a world-class example of mobilizing private capital for the development of metro stations by selling the development rights for land around the future stations (see Hong Kong MTR example).

   The potential for TOD around Tianjin's major railway stations was explored in 2003 by the Tianjin City Design Institute. The Future of Urban Development Initiative supports the continuation and/or expansion of such efforts.

   Lastly, as part of a TOD strategy, Tianjin can consider making development rights conditional to linkages with the public transportation system. Real estate developers would thus provide pedestrian connections to the public transportation system or pay a fee if the building is not within a 10- to 15-minute walk to public transit.
3. Create a safer and a more pleasant cycling and pedestrian environment. Tianjin has a stunning opportunity to leverage its large cycling population, which accounts for more than 50% of the commuting society.[26] Building a safe and comprehensive network of bicycle lanes and sidewalks can stop additional congestion before it happens. Some of Tianjin's sister cities have done this by enacting "Complete Streets" policies, which ensure that new and renovated roads are designed to accommodate the four major modes of transportation: car, public bus, bicycle and the pedestrian. This includes adding sidewalks, safe crossing zones, bicycle lanes and priority bus lanes. Many of Tianjin's sister cities support Complete Streets policies, including Philadelphia (established in 2009) and Orange County (under the California Complete Streets Act of 2011). Melbourne's city plan supports similar policies.

Case Studies

Hong Kong's Mass Transit Railway (MTR) Is One of the Few Profitable Transit Corporations in the World

The Hong Kong MTR (Mass Transit Railway) corporation is authorized by the government to prioritize property development rights for land adjacent to metro stations. Property development and rail development are combined to maximize the return on investment from the capital expenditure of the metro line and station and enable the sharing of resources, users and spaces. In 2005, the revenue from property lease along the metro line was 0.344 billion HK$, which represented 12% of the non-ticket income. By 2008, MTR's revenue reached 4.67 billion HK$ from property development and has annually served 1.2 billion people. As a result, it has become one the few profitable rail transit corporations in the world.[27]

"Complete Streets" Policy in Place in Charlotte, North Carolina, USA

The city of Charlotte instituted a Complete Street policy to address sprawling, automobile-oriented development towards providing liveable streets that are safe and comfortable for all people, regardless of age, ability or mode of transportation. Prior to this policy, the city had determined that 75% of local streets did not have sidewalks, 50% of intersections had poor pedestrian level of service and 95% of intersections had poor bicycle level of service. Studies show that, in the absence of complete streets, bicyclist and pedestrian death rates are two to six times higher.[28]

3. Optimize the Performance of Public Transportation

Experiences in many global cities such as Hong Kong, New York, Tokyo and London have shown that maximizing the efficiency of public transport systems is the most economical solution to address congestion. Through improving service quality and increasing operational efficiency, cities can build more resource-efficient and environmentally friendly transportation systems.

Development of new public transportation systems has been identified as an objective of the Tianjin master plan (2005-2020). For example, the city plans to expand the metro system from one to nine lines; open 235 kilometres of rail transit by 2015[29]; and is considering a light rail system. However, the success of these investments can only be fully realized if Tianjin maximizes the efficiency and attractiveness of these systems; encourages its citizens to choose public transportation options; and allows easy transfer between systems.

Moreover, the city has a tremendous opportunity to improve congestion by simply improving the existing bus system to be more efficient. Tianjin's public bus system is the most heavily utilized and most readily available public transportation mode, yet only 16% of commuters use the system, which is relatively low compared to other Chinese cities.[30] This provides a relatively low-cost option to address congestion compared to metro rail development.

Recommendations include:

1. Explore bus rapid transit (BRT), express and local bus options, and eliminate left-hand turns bus routes to make the existing bus system more efficient. BRT is a system that provides buses with dedicated lanes so they do not get stuck in traffic congestion. Additionally, it allows bus riders a place to gather and pay before they board the bus, which allows the bus to more quickly exit the station. BRT provides many of the same benefits as an underground metro system, but requires less capital investment, has lower operating costs and can be implemented quickly (usually one to two years)[31]. It has been implemented successfully in many fast-growing cities around the world, including Kunming and Guangzhou.

   In large cities like Tianjin, it is important for bus systems to achieve two things: allowing citizens to travel long distances quickly and providing a fine-grained bus system with frequent bus stops. Some cities, like New York, successfully meet these two needs by providing express bus service, which stops only at select major areas during rush hour, as well as local bus service, which stops approximately every five blocks. Riders can easily transfer between local and express services.

2. Pay attention to "last-mile" connections to enable people to easily access the public transit network. The metro, bus and bicycle routes should connect seamlessly and act as one system, so that people can easily transfer from one system to another without interruption or more than a five-minute walk. Bus and metro stops should also be located as close as possible to employment and residential centres so people do not have more than a 5-10 minute walk once exiting the public transit system. Additionally, good pedestrian-oriented street design around public transportation stops is essential to encourage people to ride the bus or metro.

3. Apply intelligent transport systems (ITS) with digital transportation cards that are accepted on all metropolitan public transit systems to make mixed-mode commuting easy, and provide real-time information so that riders know when the bus and metro will arrive and depart. Anecdotal evidence from Ottawa, Canada, indicates that ridership increased when the city introduced a bus-based, real-time passenger information system. Ottawa was one of the first cities to introduce such a system, which assigned a unique phone number to each bus stop and allowed passengers to call in to get information about when the next bus would arrive. This helped reduce the most onerous part of making a public transit trip: waiting.[32]

   To further encourage public transportation ridership, Tianjin can reward commuters who take public transportation with a public transit transfer benefit that will give a fare discount to those that use public transportation. Research shows that benefits like the public transit transfer can not only increase ridership, but also improve social welfare, with customer surplus up 7.13% and producer surplus up 2.95%.[33]

Case Studies

Octopus Card Provides Hong Kong Residents with Incentives to Use Public Transit

The Octopus Card was originally introduced for digital payment on public transportation. Fares are lower when the Octopus Card is used and discounts are automatically applied when transferring between modes of transit. In addition, the Octopus Card can be used in a wider range of applications such as in car parks, convenience stores and retail shops or to gain access to schools and offices. There are over 20 million Octopus Cards in use and 95% of citizens aged 16-65 own one. More than 63,000 Octopus Card readers are installed in Hong Kong and more than 12,000 retailers accept the card as payment. Octopus processes over 12 million transactions a day, at a value of more than 130 million HK$ The Octopus Card has not only lowered the cost of travelling, but also benefitted the city economically.[34]

Bus Rapid Transit (BRT) in Guangzhou Has One of the Highest Riderships in the World

In 2010, the city of Guangzhou implemented a direct service Bus Rapid Transit (BRT) system, which allows buses to operate both inside and outside a BRT corridor, greatly reducing passenger transfers compared to a trunk-and-feeder system. It is the first BRT to directly connect to a metro system and the first BRT system in China to include bicycle parking in its station design. In its first month of operation, the BRT's ridership levels were second only to Bogotá's Transmilenio, with more than 25,000 passengers per hour in a single direction at rush hour, and more than 800,000 boardings per day. Also, bus speeds are 30% higher and there are significant reductions in traffic congestion.[35]

Recommendations to Grow the Services Sector

The three recommendations to grow the service sector in Tianjin focus on opportunities that Tianjin has to leverage its existing strengths in industry and high-tech manufacturing, its air and seaports, and its educational institutions. Because there are two major financial centres located within the region – Shanghai and Hong Kong – there is uncertainty as to whether the region can support another financial services-oriented city. Thus, the experts involved in this process suggest that the greatest area of opportunity is in developing services related to the high-tech and logistics sectors, as well as services that serve the lower- and middle-income populations, rather than financial services. As a word of caution, it is also recommended that Tianjin take care to avoid over-converting from manufacturing and industry to services, e.g. through policies that create industrial land reserves.

1. Build the Tianjin Brand

Cities are fiercely competing for investment, tourism and talent in the 21st century. How a city is perceived – its physical and environmental attractiveness – affects not only the level of investment from overseas, but also the decision of employers and employees to live and work there.[36] Globalization has intensified competition among cities in different countries, but it also has made it easier for new cities to compete with older, more established ones. Tianjin's rise as an economic powerhouse in Asia and the world is due in part to the city's success in communicating its value and attracting businesses, investment and capital. Building on this success, Tianjin should further articulate its brand as a means to grow the services economy and celebrate the uniqueness of the city.

There are two major benefits to developing the Tianjin brand. First, building a robust brand can help differentiate the city among its peers as a desirable business location, a visitor destination or a place to call home. Second, Tianjin can use branding as a tool to grow the services sector by adding innovative services around the manufacturing and port activities. The Tianjin brand can be built on the city's features, strengths and aspirations for the future. Currently, the city's services sector is leading in four areas: retail, transportation, financial services and real estate. However, many of these services face competition from other cities in the region and other countries.

A city brand is not only a tag line, logo or an ad campaign, but also a compelling message to a target audience, an emotionally shared vision that has the power to influence actions.[37] For example, Zurich and New York are both famous as banking centres; yet each city is unique in its brand identity and associations. Building Tianjin's brand is akin to developing a long-term vision to communicate the aspirational identity of the city and the benefits people and businesses expect to receive from it. Ultimately, it will help shape the positive perceptions of the place. Cities are not unlike companies: those with a strong brand find it much easier to sell their products and services and attract people and investment.

The first step for Tianjin is to develop a comprehensive brand strategy. The strategy should be anchored on the city's objectives, key differentiators and positive traits. Experts have recommended that the city leverage its strengths, for example:

- Tianjin's strategic location, port and airport can be used to position the city as the "digital port of the future", "premier hub for high-tech logistics" or the "gateway to mainland China"
- Tianjin's growing high-tech manufacturing is an asset that can be used to cultivate an innovation sector by promoting new businesses in the high-tech service industry

To determine the brand positioning, Tianjin should consider conducting focus groups with key stakeholders such as the business community, residents, visitors, political leaders, media and students, and build upon these inputs. Many cities that have completed a branding project have solicited help from a professional marketing firm. Tianjin could also consider holding a competition among students and professionals to submit branding proposals. In the end, the vision for Tianjin's brand must not be imposed, but shared among the residents and industry.

Case Study

BrandHK – The Branding of Hong Kong as "Asia's World City"

The first city branding initiative, BrandHK, was launched in 2001 to highlight the city's position in the international arena and generate confidence that the city would remain the region's prominent world city. This was later revitalized in March 2012 to reflect new priorities in the city, including quality of life, among many other attributes. To ensure authenticity, a mixture of public engagement, consultation with opinion leaders, a broad cross-section of discussion groups and quantitative opinion surveys was employed. As a result, the city chose several core values to showcase Hong Kong residents' attitudes and aspirations: "innovative", "free" and "enterprising". The Hong Kong Government manages BrandHK and seeks to ensure its proper use as a promotional tool for the city's development. BrandHK works closely with InvestHK and the HK Trade Development Council.[38]

2. Incubate and Support the Growth of a Broad Range of Small and Medium-sized Enterprises

Small and medium-sized enterprises (SMEs) are generally defined as having fewer than 1,000 employees and with revenues of 400 million RMB or less in China.[39] They can take the form of day-to-day amenities (restaurants, dry cleaning, etc.); high-value services (start-ups in research and development, technology, finance, logistics, media, etc.) or labour-intensive activities (small-scale manufacturing, etc.).

Numerous, thriving SMEs of all types bring many benefits to a city, including significant employment opportunities and positive contributions to the gross domestic product. SMEs can yield additional benefits when strategically located within a city. For example, when SMEs that provide day-to-day amenities are located within walking distance of consumers (e.g. at ground level, close to public transit and in a mixed-use setting), they can improve the desirability and vibrancy of neighbourhoods. When positioned around industrial hubs, high-value SMEs can drive innovation in the industries where they are co-located. In these ways, service-oriented, small and medium-sized enterprises can draw a talented workforce and increase a city's competitiveness.

Fostering the growth of SMEs can be advantageous to Tianjin as it looks to grow its services sector. The city has already taken important steps. It has pledged 20 billion CNY to develop additional technically-focused SMEs; set a goal to incubate 1,500 "Little Giant" enterprises to a value of 100 million CNY each; and established the Ten-Hundred-Thousand Project, which aims to build 10 or more national incubators, 100 or more incubator carriers and develop 1,000 square metres or more of total area dedicated to incubating new businesses.[40] To ensure that the full benefits of SMEs can be reaped through Tianjin's remarkable investment commitments, three actions are recommended:

1. Design incubator facilities to include space for the lifestyle and day-to-day amenities that are attractive to the services-sector workforce (athletic facilities, restaurants, dry-cleaning, etc.) and strategically place many around public transit nodes and areas with high pedestrian traffic. Mixed-use incubator facilities that include housing opportunities and or live/work spaces are also highly encouraged to reduce traffic congestion.
2. Foster the growth of SMEs around the core manufacturing industries of Tianjin, a strategy referred to as cluster development. Cluster development will encourage different types of services and organizations to co-locate alongside specific industries to complete the value chain, such as research and development, industry associations, training organizations, media and financial services, which can drive innovation. For example, in response to growing competition in Asia, the Port of Singapore expanded its maritime industry to include shipbuilding and repair, shipping finance, maritime insurance and legal and arbitration services to form the Singapore Maritime Cluster. It is currently the world's busiest port in terms of throughput tonnage.[41] Tianjin's role would be to support existing enterprises like the Tianjin Port to take on new specialties; place incubator facilities next to industrial facilities; or encourage new development around industrial facilities that caters to the spatial needs of SMEs.
3. Guide real estate developers to include small-scale retail or commercial spaces on the ground floor of new development projects that meet the spatial needs of SMEs, particularly those that offer day-to-day amenities. The city could also establish urban design guidelines for specific neighbourhoods that include space for small-scale retail and commercial; emphasize the pedestrian landscape; and encourage mixed-use in close proximity to public transit. For example, New York City has special regulations to restrict the amount of ground floor street frontage that may be occupied by non-active uses, such as offices and residential lobbies, to ensure active and diverse streets and give SMEs ample space.[42]

Case Studies

TEDA Incubator Contributes to Tianjin's Growing Services Sector

The TEDA International Incubator Center in Tianjin was established in 1996 to support the growth of new enterprises in the information technology, healthcare and new energy industries. By providing entrepreneurs with office space, new service companies were created in the areas of research and development, human resources, marketing, communications and financing to strengthen industry clusters. As of 2008, TEDA employs over 3,000 and boasts an annual revenue of 3.86 billion CNY.[43]

Shanghai's Innovation "Live-Work-Play" Campus Provides Services in a Mixed-use Development

The Knowledge and Innovation Center (KIC) in Shanghai was established in 2003 to rebuild an industrial portion of the city into a centre for technological innovation and entrepreneurship. With over 8,000 residents today, the KIC was designed as a "live-work-play" community that provides space for housing, education, technology, culture, research and business incubation on a pedestrian- and bicycle-oriented campus. The KIC model for innovation is successful because it allows for cross-sector and cross-industry collaboration while providing an appealing environment for people to live and work.[44]

3. Collaborate with Universities to Establish Services Industry-based Curricula

A modern city's economic prosperity and competitiveness depend not only upon its connection to the world through information technology and transportation infrastructure, but also upon its ability to harness innovative practices and build new businesses. Within this context, schools and universities are central to generating intellectual capital, innovation, science and culture.[45] With over 59 universities within its boundaries, Tianjin has a significant opportunity to leverage its educational system to grow its services sector in a manner that is focused on innovation and in lock-step with its brand, whether as a digital port of the future, a premier hub for high-tech logistics, or otherwise. By establishing new and/or improved degree programmes that align to the desired services-sector skillset and by partnering with educational institutions and enterprises directly, Tianjin can help create a skilled workforce with specific and relevant areas of expertise.

Partnering with educational institutions and enterprises can take many forms. There are several initiatives in China that have successfully transferred knowledge from experts to students. For example, a major consultancy firm based in India has partnered with Chinese universities in several cities in China to train future employees. The consultancy sends experts into the classroom to design and teach courses and subsequently hires the students as interns after the course is completed. This strategic partnership yields many mutual benefits: it improves the quality of education at the university, provides jobs for matriculating students and allows the firm to grow its business.

This arrangement could be replicated in Tianjin given the high concentration of Fortune Global 500 companies that have established offices in the city. Another option is for Tianjin to partner with universities to facilitate knowledge transfer. For example, when New York City was looking for ways to foster innovation, it partnered with Cornell University and Technion-Israel Institute of Technology to build an applied sciences campus in the city (see box), with support from Google. Lastly, the city of Tianjin could work directly with universities and technical colleges to develop new or additional programmes to support services it wishes to develop or promote, while also working with businesses to encourage internships for students of those programmes.

Many Tianjin graduates are already working in high-tech companies in the city, such as Honeywell and Airbus, and with the growth of high-tech services and higher education programmes, the number of skilled workers in Tianjin will continue to increase. These workers represent the city's human capital, a valuable asset worthy of retaining.

As discussed, Tianjin is competing with other cities for not only investment, but also for companies and talent to call the city home. This means ensuring the establishment of lifestyle and service amenities, including retail, restaurants, hotels, parks, athletic centres and entertainment. In addition to highly skilled labour, Tianjin should promote adequate vocational training opportunities for low- to medium-skilled labour. With the growth of the service economy, the creation of further jobs in contracting, hospitality and food services is anticipated.

Case Study

New York City Partners with Cornell University and Technion-Israel Institute of Technology to Foster Innovation

In 2012, Cornell University and Technion-Israel Institute of Technology won a New York City-led competition to build an applied sciences campus in the city. The partnership is part of a larger initiative to grow the technology and innovation sector in New York City by working with universities to build human capital. The new campus will be part graduate school, part start-up incubator and will house a network of classrooms, labs, conference spaces and living quarters to foster an innovation-friendly environment. The project is being funded by a US$ 400 million land and infrastructure grant from the city.[46]

Conclusion: Moving from Vision to Action

The Future of Urban Development Initiative begins by connecting cities with a global, multistakeholder group of industry leaders and experts to collectively strategize on major urban development challenges and opportunities; and follows through by equipping those cities with a complete set of strategic recommendations, an established network to help catalyse implementation and a platform to showcase success and action over time.

With the six strategic recommendations of this report in hand, Tianjin has a singular opportunity to take action towards implementation with the support of the steering and advisory boards that have collaborated throughout the Champion City Action Model. The benefit of taking action now is twofold: not only can the city leverage the momentum and the community that the Future of Urban Development Initiative has created but, by taking action, it will also serve as an international model for cities around the world, in the spotlight provided by the World Economic Forum's platform of events.

In considering implementation, Tianjin has three principal channels to implement the recommendations in this report, including a traditional model, a cooperative model, and a consortium model (see Figure 2). Under the traditional model, the city would be the exclusive agent for implementation. With the cooperative model, the city would guide action of the private sector through a tendering or concessions process following a request for services. A consortium model would be based on a public-private partnership, in which the private sector would actively propose solutions to the public sector. Tianjin is uniquely positioned to take advantage of the consortium option because it already has in place an established community of interested private sector companies and organizations.

Figure 2: Implementation Options

Consortium Model

- A Collaborative public-private partnership in which the private sector proposes solutions to the city as part of planning and design process
- Encourages advanced innovation
- Shares cost among participants

Cooperative Model

- The city drives planning and design
- Invites commercial / private sector cooperation for specific solutions through concessions
- Companies participate in guided project development

Traditional Model

- The city unilaterally owns implementation responsibility
- Drives approach planning and design
- Solely funds projects development

One potential operational model would be to have participating companies bear the cost of pilots, which if successful, would be scaled up and funded by the city. The exact model of a Tianjin Consortium would be defined by the stakeholders involved in the Champion City process based on the unique needs of all parties that are involved.

Case Study

Amsterdam Smart City Consortium

Amsterdam Smart City (ASC) is a unique partnership between businesses, authorities, research institutions and the people of Amsterdam, with the shared goal of developing the Amsterdam Metropolitan Area into a smart city. A city is smart when investments in capital and communication infrastructure fuel sustainable economic growth and a high quality of life, in combination with an efficient use of natural resources. Over the past three years, the consortium has grown into a broad platform, with more than 70 partners that are involved in a variety of projects focusing on energy transition and open connectivity. By using a collective approach of bringing partners together and setting up local projects, ASC makes it possible to test new initiatives. The most effective initiatives can then be implemented on a larger scale. All the acquired knowledge and experience is shared via the ASC platform.[47]

Overcoming Challenges to Implementation

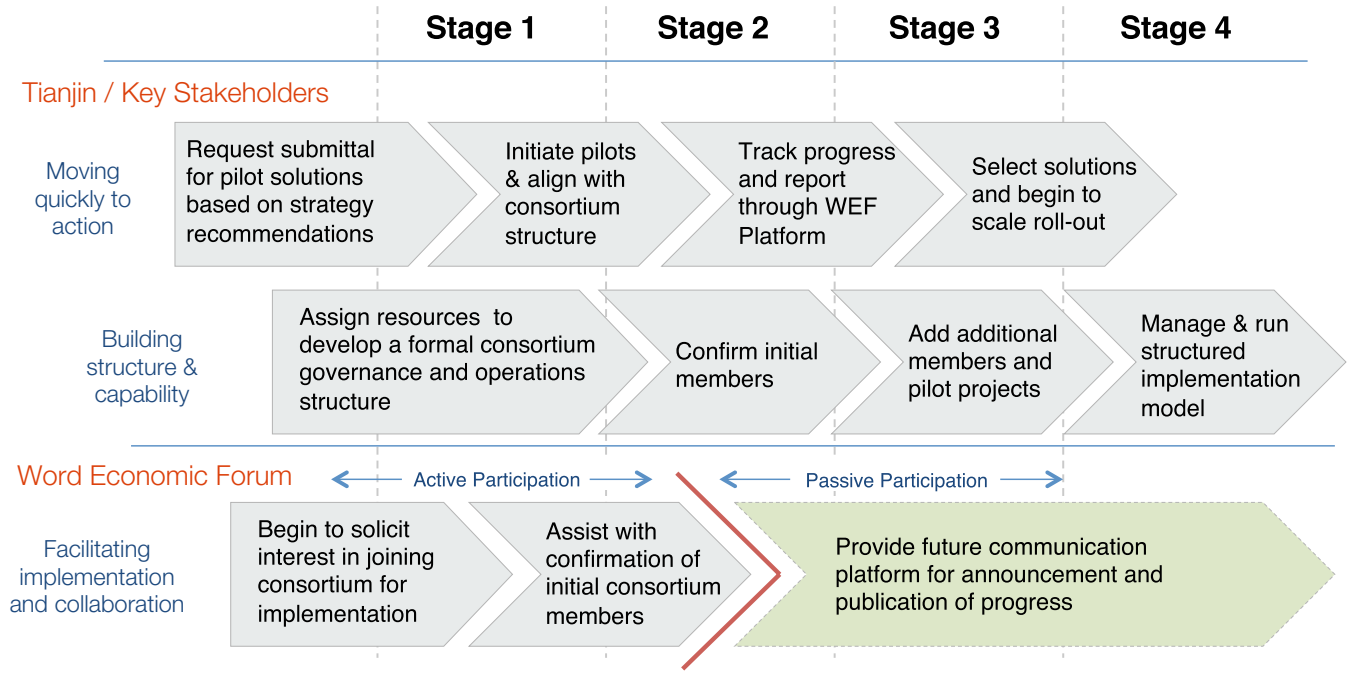
Moving from vision to action poses challenges. There are barriers to the implementation, scaling and financing of pertinent activities that need to be addressed by a number of stakeholders. While many of the recommendations rely on policy change at the governmental level, Tianjin's goals cannot be achieved by the public sector alone. Entrepreneurs, companies and academics are poised to play a vital role by bringing innovation, talent and ideas to address Tianjin's two goals of improving traffic congestion and expanding the services sector. A consortium model of implementation can ultimately help in overcoming these challenges by providing for partnerships and risk and cost-sharing mechanisms.

A series of short-term steps is needed to prepare for the engagement and implementation process. The first step is an endorsement of the recommendations by key stakeholders. Support for the recommendations is critical as they will be the basis for action and development. The second step is the identification of champions and owners. Each recommendation aligns with a particular function or set of functions in Tianjin. The owners responsible for these functions need to be identified and engaged for buy-in and implementation. The third step is gathering additional information to ensure alignment. A clear understanding of Tianjin's activities and future plans is needed so that the recommendations can be aligned in the current context. The final step is the formation of a collaborative implementation structure. Successful implementation of the recommendation can be facilitated by a structured implementation model that is open and inclusive, allowing for a programmatic and comprehensive approach. Figure 3 illustrates a possible starting point for Tianjin to catalyse action once a implementation model is determined.

The most successful and competitive cities have achieved their goals through a collaborative approach involving government, business and academia. In this approach, entrepreneurs, industry leaders and organizations play a vital role by bringing innovation, talent, solutions, expertise and experience. Each city has its own challenges, opportunities and approach to implementation. Ultimately, it is up to Tianjin to decide which implementation approach would best suit its goals of innovatively addressing congestion and growing its service economy. Tianjin is poised to engage in a collaborative approach with the support of the steering and advisory boards of the initiative.

Parallel to the process of catalysing implementation in Tianjin, the Future of Urban Development Initiative will build from the success of the project model in the inaugural city of Tianjin, and expand to work with additional cities in China and elsewhere. The China Center for Urban Development will serve as the regional collaborator in China and will be responsible for taking insights and knowledge generated through the Tianjin experience and disseminating them to other cities with similar goals and challenges. The steering board will also consider additional regions and cities to expand the project model in 2013.

Figure 3: Example of a Potential Roadmap to Implementation under a Consortium model



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