A Research on Monitoring and Evaluation System of Beijing as a World-city

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In the 21st century, as the trends of economic globalization and informationization converge, cities play increasingly important role. They are the nodes on a global network. From the developing countries to the developed world, cities grew into power houses of global socio-economic activities. They compete on the global stage on behalf of the countries they represent. The 29th Olympiad of Beijing in 2008 and its great success greatly enhanced the city's global influence and overall strengths, laying a solid foundation for the city to outperform its peers amidst global urbanization process. In order to build Beijing into a world city and command the strategic height of post-Olympic period, the municipal government in early 2010 developed strategic goals for Beijing as a world city. The plan attempts to draw a blueprint for Beijing's future by stating higher standards and requirements.

Ⅰ.Concept and basic features

"World city" first appeared in 1889, a term the German scholar Goethe used to describe Rome and Paris. The first definition was offered by a city planner Patrick Geddes in Scotland in his 1915 book Cities in Evolution.World city was defined as cities with outstanding advantages in global commercial activities. One century passed since the concept came into being.

Later, British geologist and planner Peter Hall, US urbanologist John Friedman, US economist Saskia Sassen and M. Castells all studied the theory of world city.

1．The concept

Studies show that world city in modern times has evolved from its original definition. Economic aggregate, population, size and business communications are no longer the only evaluation indicators. Increasing stress is given to the city's role and influence in multiple dimensions in the context of globalization. A world city should be forward-looking and point the way for the future. Contemporary world cities are first of all comprehensive and multi-functional. They should also be the economic, financial, trade and diplomatic nodes of global urban network. They are at the very center of global economic, social, political and human affairs.

Therefore, modern world cities are an advanced form of international cities. They are where headquarters of multinational companies are located. They attract high-end talents and important international acitivities. They exert influence in political, economic, social anc cultural areas by their sheer strength. They are the power houses of global socio-economic activities and they occupy core nodes on global urban network.

2. Basic features

Summarizing definitions and criteria of world cities by scholars and research institutes around the globe, we may regard world cities as those with the following features:

Solid economic strength; large and diversified population; important international financial center; highly developed high-end service sector; high level of internationalization and open atmosphere; strong global influence; unique urban culture and charm; rich historical legacy; pooling the resources from and lead the development of other cities close bay; sophisticated urban infrastructure and managerial skills.

Contemporary world cities have the features above, which cause them to be influential in global socio-economic affairs. Beijing needs to comply with the general laws of urban development before it becomes a world city. Beijing needs to upgrade its overall strengths by paying attention to the content and common features of world cities. Beijing should be able to pool resources from and lead the development of other cities and consolidate its influence in global urban network. Beijing should try hard to satisfy all international standards and criteria of world city.

No consensus is reached on the true form of world cities. Cities have chosen different ways of development, their forms varied and unique. Financial strength, political status, technological innovation and art and culture are all important features of world cities. No one-size-fits-all definition is agreed on by the academic circle. Therefore, Beijing may look at its own realities and work hard on its own strengths. Beijing should address city development needs at the current stage and explore its own way of evolution, while following the basic criteria of world cities.

Ⅱ.Evaluation indicators

World city evaluation indicator system is at the very core of research, monitoring and evaluation.

1. Indicator system for basic features

These indicators describe the attributes of world cities. They are derived from common features of world cities and proposed by scholars and research institutes of different periods and perspectives. Despite extension and evolution through time, these indicators mainly involve three domains. First, the "development strengths" based on economic scale, such as economic scale by John Friedman (1995). Second, the "pooling effect" based on population and number of multinational corporate headquarters, such as Accountancy, Advertising, Banking and Legal Service by GaWC (1999). Third, the "communicative skills" based on number of international organizations and international transport hubs, such as number of main transport hubs and international organizations by John Friedman (1986) and number of NGOS by Knox (1995). The system is at the very core of research and sheds light on the direction of world city studies. It merits special attention from Beijing in its bid to build a world city.

2. Comparative indicator system stressing competitiveness

These indicators measure single or multi-dimensional strengths of cities in different development stages.

①**Single dimensional indicators**

In 2009, Mercer finished a "global urban quality of life" survey. The study investigated 10 categories (39 factors) of indicators which affect life quality. They include: political and social environment, economic environment, socio-cultural environment, medical and health environment, schooling and education conditions, public services and transport, leisure and entertainment, consumption, housing and natural environment.

In 2009, Fortune made a comparison of cities based on number of "Fortune 500 Companies" and "Total Turnover of Fortune 500 Companies".

US magazine Happiness used five indicators (population, consumer index, number of flight routes to other cities, per square meter rental in office buildings, openness to other cultures) to list world top 10 trade cities.

In 2008, US media listed "World Top 10 Science Cities". In 2009, UK magazine Economist revealed its annual award for "Most Livable Cities". All these lists were using single dimensional indicators.

②**Multi-dimensional indicators**

In 2008, Dr. Ni Pengfei from CASS and Professor Peter K. Kresl from Bucknell University jointly began a study of global urban competitiveness. They hold that competitiveness is a core factor for world city development and those competitive cities are world leading cities. Global Urban Competitiveness Report (2007-2008) used 9 indicators (GDP, per capita GDP, per squared km GDP, productivity, number of multinational corporations, number of patents, price advantage, economic growth rate and employment rate) to measure the overall strengths of 500 cities.

In October 2008, US magazine Foreign Policy developed world city indicators in five dimensions, i.e. business activity, human capital, information exchange, cultural experience and political engagement. Cities around the world were ranked accordingly.

In March 2010, the Partnership for New York City and PWC jointly investigated "factors boosting urban prosperity". Their study includes ten general indicators: intellectual capital, technical expertise and innovation, economic influence, transport and infrastructure, business-friendliness, cost, sustainability, health and security, demographics and livability, lifestyle asset. 58 variables were used in the study.

In various studies, different comparative indicators were used. Some stress business activities, information exchange, political participation, cultural exchange and other overall features. Others stress single features such as science, life quality, trade, wealth etc. All indicators are consistent to the core functions of world cities. They are complimentary and stress the strength, capability and potential of competition. Intellectual capital, R&D level, livable environment, life quality and sustainability are the basis of world cities. They are needed for cities which hope to stand on the commanding height of global urban network. Comparative indicators tell us what will be the core competitiveness for world cities in the future.

3. Directional indicators

①**Fundamentals**

These indicators guide the building of world cities. US urbanologist Friedman once said that cities to a large extent are the results of public policies, and cities of the next century will be the results of public policies.

Tokyo 2000, "London Pride Prospectus", New York 2030, London 2030, Sustainable Sydney: Up and Beyond 2030, Hong Kong 2030: Outlook and Strategies raised different development pathways and key strategic frameworks. All aim at building a world city.

②**Basis of directional indicators**

World class cities like London, Tokyo, New York, Paris and emerging world cities like Hong Kong and Sydney developed diversified strategic plans. However, these plans share three common themes: attention to the people and society, improved strength and status, and green development.

The foregoing analysis shows that people's development, competitiveness and green development will be the common theme and objective of world cities in the future. This is critical to Beijing's bid to become a world city. The basis of world city is the upgrading of urban culture, urban image and comprehensive development of the people. The engine of world city is IT technology, science development, competitiveness and overall economic strengths. The direction of world city is green, livable and sustainable environment.

In summary, the first two groups of indicators analyze world cities as they are. They are reference to the selection of core functions and indicators. Directional indicators look into the future, pointing out the way and model for cities like Beijing.

III. Monitoring and evaluation system

1. Principles

First, global reach. The monitoring and evaluation system of Beijing should fully comply with the content and features of world city concept and international standards, so as to allow comparative studies.

Second, with "Beijingness". The system should reflect the positioning of Beijing per central government planning. The overall plan for Beijing is the "capital city, international city, cultural city and livable city.

Third, gradual process. The system should keep up with latest trend of the world while taking note of realities and development needs of Beijing. The system will be constantly adapted to special needs of the city as time goes by in order to be relevant and lead the way. The system proposed in this paper aims at a timeline between 2010 and 2020.

Fourth, workability. The system should be consistent to the development plan, strategic goals and key tasks of the city and help municipal government make scientific decisions. The system should also accommodate the fact of lack of data in the field and make sure indicators are collectable (especially international comparative data) and stable. Otherwise monitoring and evaluation are not possible.

2. Design strategy

The monitoring and evaluation system in Beijing needs to comply with international trends and standards. It should be consistent to the city's functional positioning, strategic goals and development philosophy. Common grounds need to be found while unique features preserved. Beijing needs to find its own way of building first-class world city suitable for a developing nation.

Through comparative analysis of descriptive, comparative and directional indictors, the design strategy of the monitoring and evaluation system should feature "common indicators based on the descriptive system and "differentiating indicators" based on comparative and directional indicators.

3. General framework

The monitoring and evaluation system consists of four layers: dimensions, areas, factors and representative indicators.

①**Dimensions**

Dimension is the overall understanding of evaluation framework. There are two

dimensions: "common indicators" and "differentiating indicators". The former reflects consensus on the content and core features of world city concept among academics. The latter means customized development pathway of Beijing.

②**Areas**

Areas are detailed dimensions. According to international standards, "international influence" is set up. Three areas are set up under the dimension of "differentiating indicators", i.e. "people's development, science development and green development".

③**Factors**

Factors are details in each area. They are the focus of attention in each area and specific tasks of building a world city in Beijing. They underpin the system of monitoring and evaluation.

The academic circle generally believes that international influence has three components: first, outstanding economic strength, such as large scale and economic aggregate, high level of economic development and post-industrialization economic structure; second, strong pooling and controlling power, global capital flow control center and operation management center, fundamental role in human resources, materials, capital, technology and information flow as well as control over economic, social and cultural affairs; third, good capital flow management and international communication skills and high level of internationalization and openness. Therefore three factors were set up under the area of "international influence", i.e. "economic level", "pooling power" and "communication level".

According to the three action plans ("people's Beijing, hi-tech Beijing, green Beijing) and future tasks, ten factors were set up, i.e. people's quality, public service, urban culture, cultural development, science resources, R&D results, level of informationization, resource conservation, environmental protection and ecosystem preservation.

④**Representative indicators**

In order to operate efficiently, the evaluation system cannot become too complex. Only the most representative indicators are selected for evaluation. The selection is based on the unique features of Beijing and meets development needs at the current stage. The data should be collectible and result comparable.

Table 1   Monitoring and Evaluation System of Beijing as a World-city

Dimension	Area	Factor	No.	Representative indicator
Common indicators	International influence	Economic level	1	per capita GDP
			2	share of tertiary industrial added-value
		Pooling power	3	number of financial headquarters and Fortune 500 headquarters
			4	UN and other international organizations
			5	number of large international conferences and exhibitions
			6	permanent foreign residents
		Level of communication	7	number of inbound tourists
			8	capacity of passenger flights

Differentiating indicators	People's development	People's quality	9	avg. expected life span
			10	avg. year of education
		Public service	11	length of rail transport
			12	public service equality index
		Urban culture	13	citizen civility index
		Cultural development	14	number of state-level cultural monuments and museums
			15	share of creative industry in total GDP
	Hi-tech development	Science resources	16	full-time personnel equivalent R&D personnel
		R&D results	17	number of international patents
			18	share of revenue from new products in total sales revenue by industrial companies
		Level of informationization	19	broadband access per 1,000 persons
	Green development	Resource conservation	20	energy and water consumption per 10,000 Yuan GDP
		Environmental protection	21	share of clean energy
			22	Daily mean of NO2 and inspiratory granule in the year
		Ecosystem preservation	23	Coverage of city green areas

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