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China City Sustainability Index 2013

China's economy flourished following the reforms and opening up policy. This has led to large numbers of people migrating into the cities causing an unprecedented development of urbanization. The issue of how to ensure the sustainability of China's economic, social and environmental growth is a much talked about topic. In order to provide a snapshot view of how 287 mainland cities are dealing with sustainable development and promoting a more sustainable future we developed the City Sustainability Index (CSI). All cities of prefecture-level or above have been included except Lhasa because of a lack of data. The main data source is from the China City Yearbook.

1. City Sustainability Index Conceptual Framework

The City Sustainability Index 2013 relies on 5 sub-indices: the environment, economy, infrastructure, culture and education and social insurance (Figure 1).The environment

The infrastructure sub-index is made up of 7 pillars: communication and information technology, postal services, road traffic construction, transport capacity, water and gas supply and drainability.
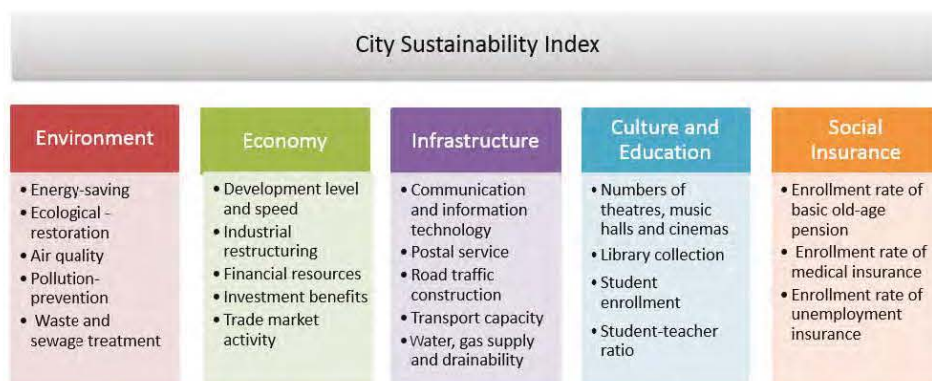

City Sustainability Index

Environment	Economy	Infrastructure	Culture and Education	Social Insurance
• Energy-saving • Ecological - restoration • Air quality • Pollution-prevention • Waste and sewage treatment	• Development level and speed • Industrial restructuring • Financial resources • Investment benefits • Trade market activity	• Communication and information technology • Postal service • Road traffic construction • Transport capacity • Water, gas supply and drainability	• Numbers of theatres, music halls and cinemas • Library collection • Student enrollment • Student-teacher ratio	• Enrollment rate of basic old-age pension • Enrollment rate of medical insurance • Enrollment rate of unemployment insurance

Figure 1 City Sustainability Index 2013

The culture and education sub-index consists of two pillars: culture development and education progress. Indicators of culture development are the numbers of theatres, cinemas and library book

sub-index is comprised of 5 pillars: energy-saving, ecological restoration, air quality, pollution prevention, as well as domestic waste, solid waste and sewage.

The economy sub-index consists of 6 pillars: the level and speed of economic development, industrial restructuring, local financial resources, investment benefits and trading market activity.

collections. Indicators of education progress include student enrollment and the ratio of teachers to students in high schools, middle schools, and primary schools.

The social insurance sub-index relies on 3 pillars: the enrollment rate of the basic old-age pension, medical insurance and unemployment insurance.
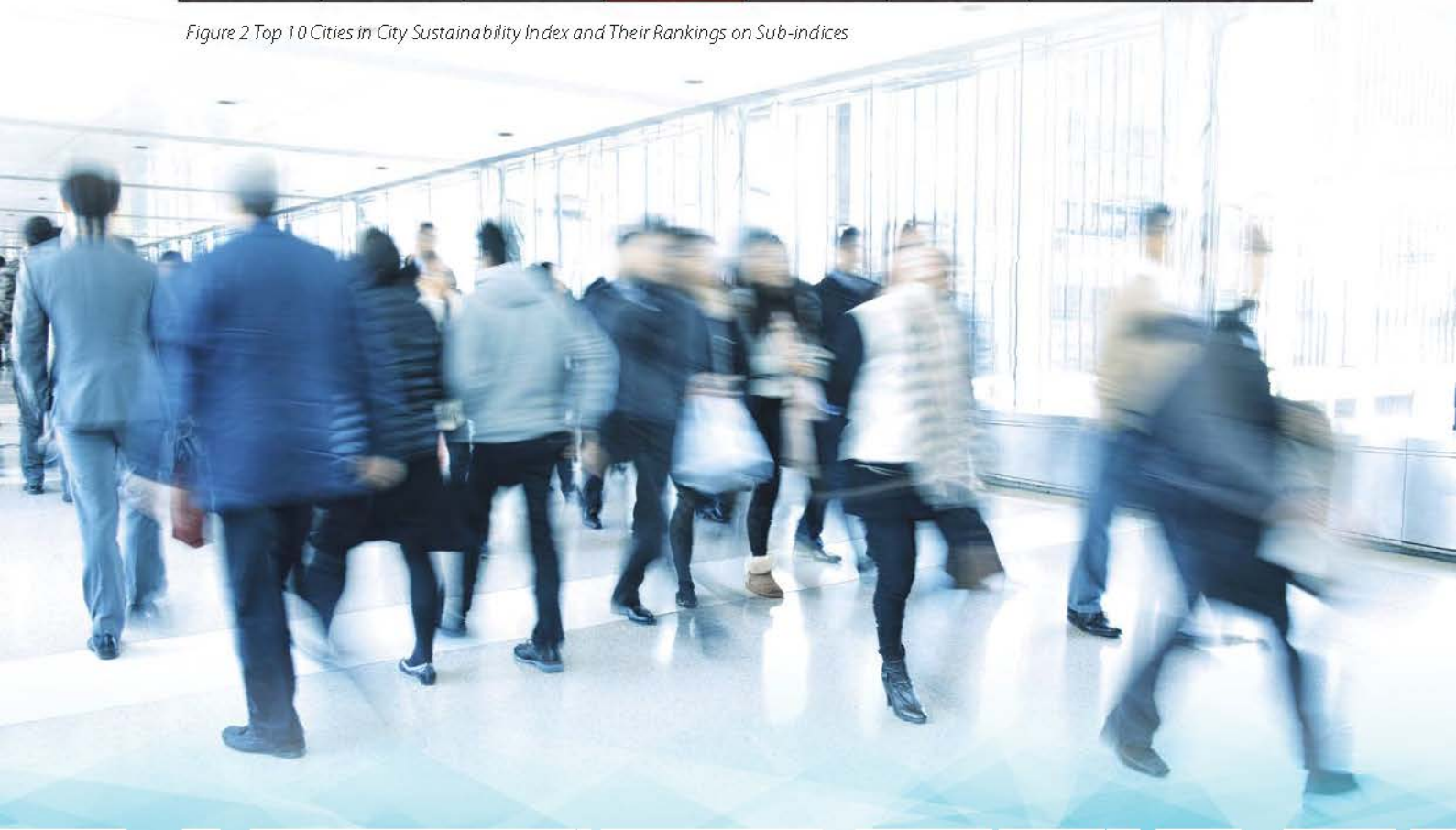
2. Current Sustainability Situation in Mainland China -Index Rankings 2013

The top 10 cities in the China City Sustainability Index 2013 are: Shenzhen, Dongguan, Beijing, Xiamen, Shanghai, Zhuhai, Guangzhou, Zhongshan, Foshan and Nanjing (shown in Figure 2). Guangdong province stands out with 6 of these top 10 cities. Fujian and Jiangsu each have 1of the 10 The remaining 2 are the municipalities ofBeijing and Shanghai.

Although the cities above stand out in the major indices categories, there remains room for enhancements in sustainability measures within certain pillars. Those areas of major concern are highlighted. In the environment category these are i Zhongshan (39th), Beijing (41st), and Nanjing (101st). In the culture and education category they are Zhuhai (58th), Foshan (102nd) and Zhongshan (117th).

CSI Ranking	City	Province	Environment	Economy	Infrastructure	Culture & Education	Social Insurance
1	Shenzhen	Guangdong	1	1	1	2	2
2	Dongguan	Guangdong	3	2	2	9	1
3	Beijing	/	41	4	5	1	6
4	Xiamen	Fujian	6	6	3	18	4
5	Shanghai	/	28	7	8	3	9
6	Zhuhai	Guangdong	4	12	4	58	5
7	Guangzhou	Guangdong	10	3	9	11	8
8	Zhongshan	Guangdong	39	10	14	117	3
9	Foshan	Guangdong	5	8	13	102	7
10	Nanjing	Jiangsu	101	19	18	4	19

Figure 2 Top 10 Cities in City Sustainability Index and Their Rankings on Sub-indices

3. Moving to Better Sustainability-Learning from Model Cities

As in Figure 2, cities performing the best in the five sub-indices are: Shenzhen (top in environment, economy and infrastructure), Dongguan (top in social insurance) and Beijing (top in education). . Regarding the pillars which make up the sub-indices the following 9 model cities are worthy of note as they rank first in one or more pillars (shown in Figure 3).

Four cities (Shenzhen, Dongguan, Beijing, and Nanjing) are also listed in the top 10 cities in the CSI 2013, so it is not surprising that they come top in several pillars. Five more cities (Shanwei, Yichun, Erdos, Qinzhou and Maomin) stand out as having unique pillars It is hoped that these model cities will point the way towards better sustainability for other cities.

Model city	Model pillar	Corresponding sub-index
Shenzhen	Ecological restoration and pollution prevention	Environment
	Financial resources and trading market activity	Economy
	Postal services, road traffic construction, transport capacity, gas supply and drainability	Infrastructure
	Basic old-age pension enrollment	Social insurance
Dongguan	Communication and information technology & water supply	Infrastructure
	Medical insurance and unemployment insurance enrollment	Social insurance
Beijing	Industrial restructuring	Economy
	Culture development	Culture and education
Nanjing	Education progress	Culture and education
Shanwei	Energy-saving	Environment
Yichun	Treatment of domestic waste, solid waste and sewage	Infrastructure
Erdos	Economic development level	Economy
Qinzhou	Economic increase speed	Economy
Maomin	Investment benefits	Economy

Figure 3 Model City in each pillar