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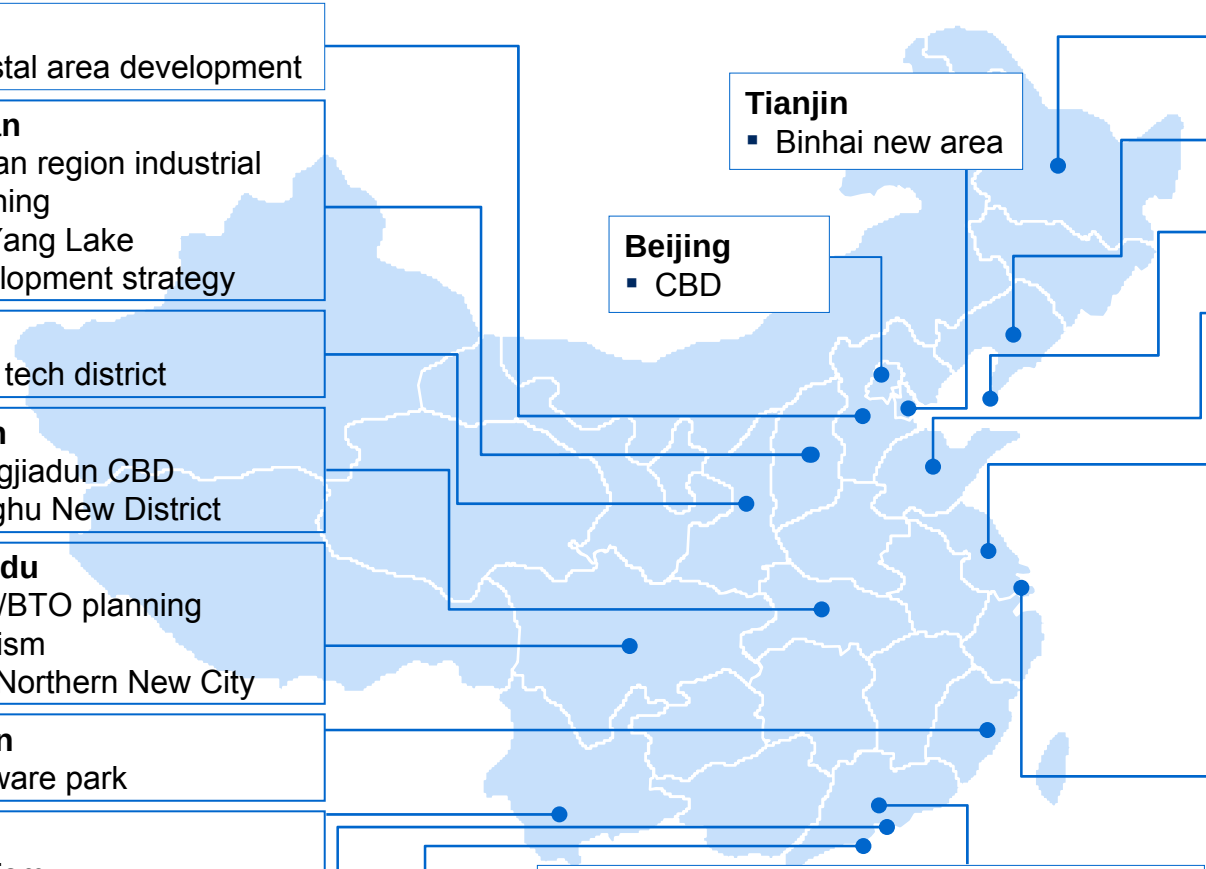
Sustainable Urban Development

December 2013

McKinsey&Company

In China, we have established leadership in serving China's local governments in support of district development

PROJECT EXAMPLES



Hebei
- Coastal area development

Taiyuan
- Xishan region industrial planning
- Jin-Yang Lake development strategy

Xi'an
- High tech district

Wuhan
- Wangjiadun CBD
- Donghu New District

Chengdu
- BPO/BTO planning
- Tourism
- The Northern New City

Xiamen
- Software park

Yunan
- Tourism

Hong Kong
- CBD re-positioning
- Metro strategy & ops
- New CBD development
- Metro-related property development

Macao
- Tourism

Guangdong
- Shenzhen Dapeng peninsula development
- Zhuhai Hengqin investment environment improvement
- Guangzhou Zengcheng Xintang int'l business center
- Zhongshan Cuiheng new district

Tianjin
- Binhai new area

Beijing
- CBD

Harbin
- High tech park

Anshan
- High tech zone

Dalian
- High tech zone

Shandong
- Qingdao BTO/BPO park

Jiangsu
- Huaqiao business district
- Nanjing culture / creativity
- Haimen Binjiang new district

Shanghai
- Lingang development zone
- SH Auto City
- Nanjing Rd. strategy
- Huangpu Dis. modern service development
- Sichuan Rd business center
- SH commerce development
- SH metro system strategy
- EXPO interim development
- Pudong government re-org
- Pudong shipping center
- Lujiazui international financial center strategy
- Qingpu development

SOURCE: McKinsey analysis

The Urban China Initiative

The Urban China Initiative is a research initiative launched in 2010 jointly by Tsinghua University's School of Public Policy and Management, Columbia University's Global Centers and McKinsey

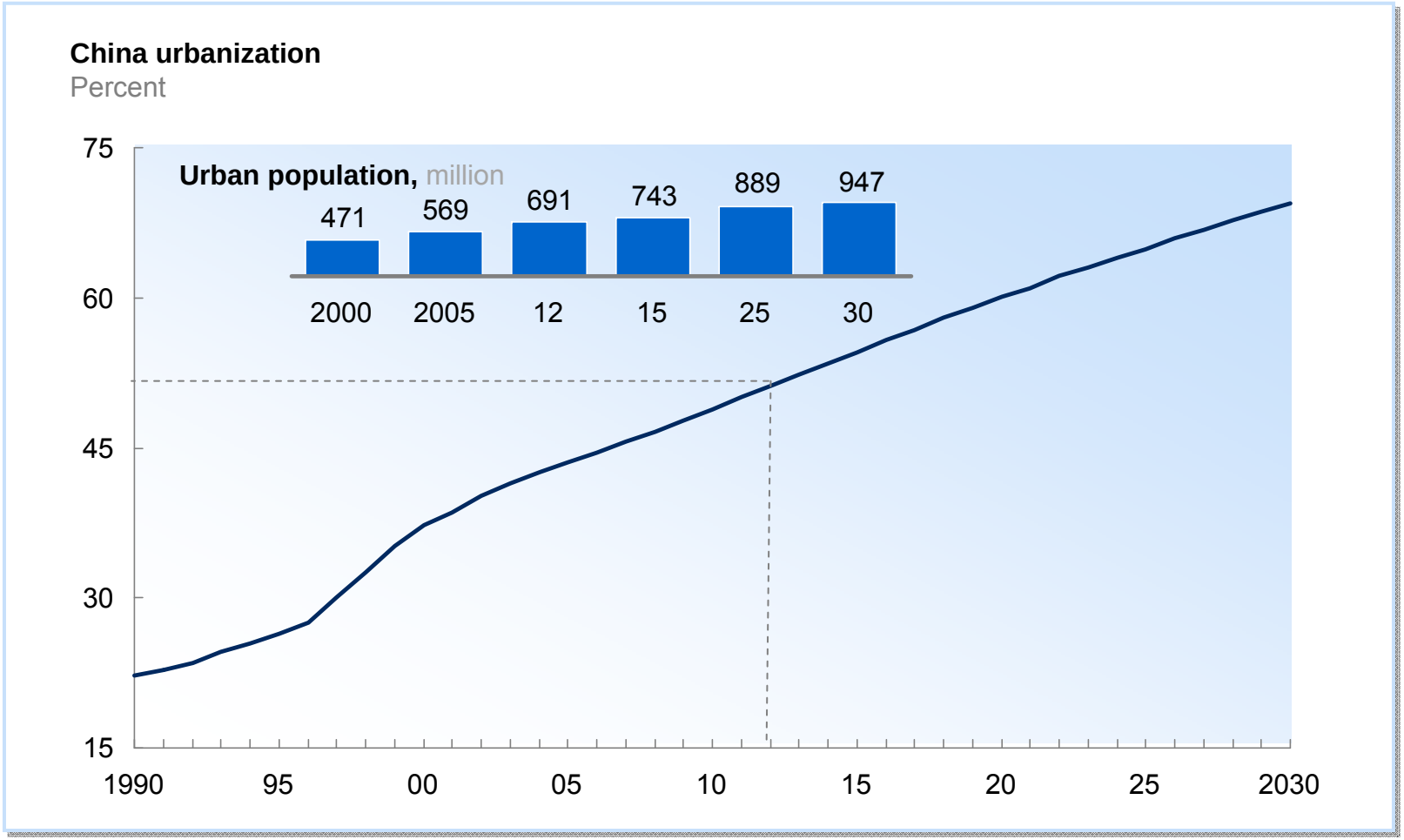
Mission: To act as a catalyst for the next horizon of China's urbanization, and to support China's cities as they innovate. The UCI develops solutions, facilitates dialogue, and provides a home for China's leading domestic and international urban thinkers and professionals.

Activities in 2011:

- Funding 10+ research projects related to urban development
- Developing China's first city sustainability index
- Holding annual conference and quarterly seminars on urban development
- Piloting initial research results with local governments

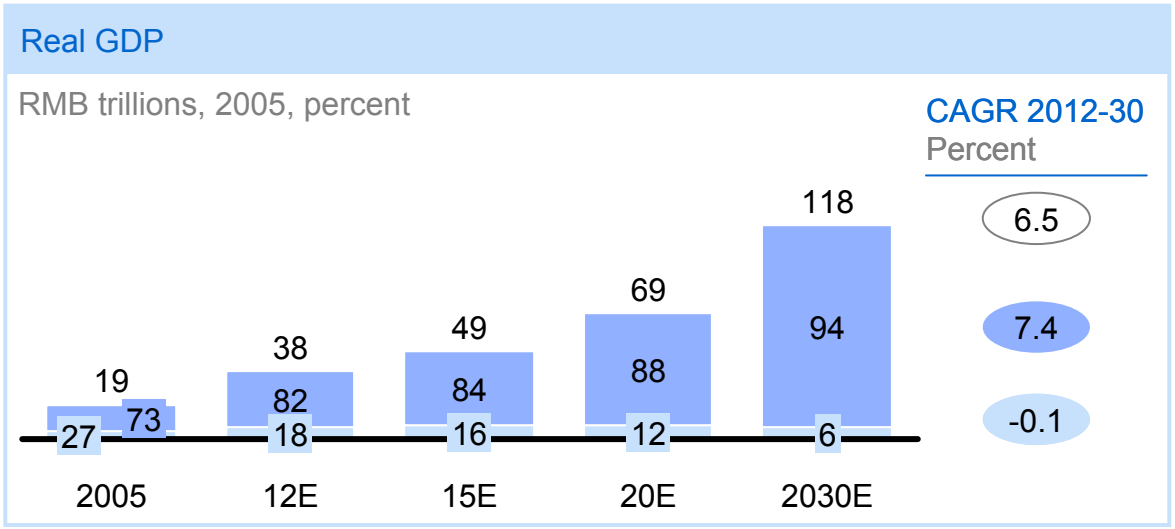
SOURCE: http://www.urbanchinainitiative.org

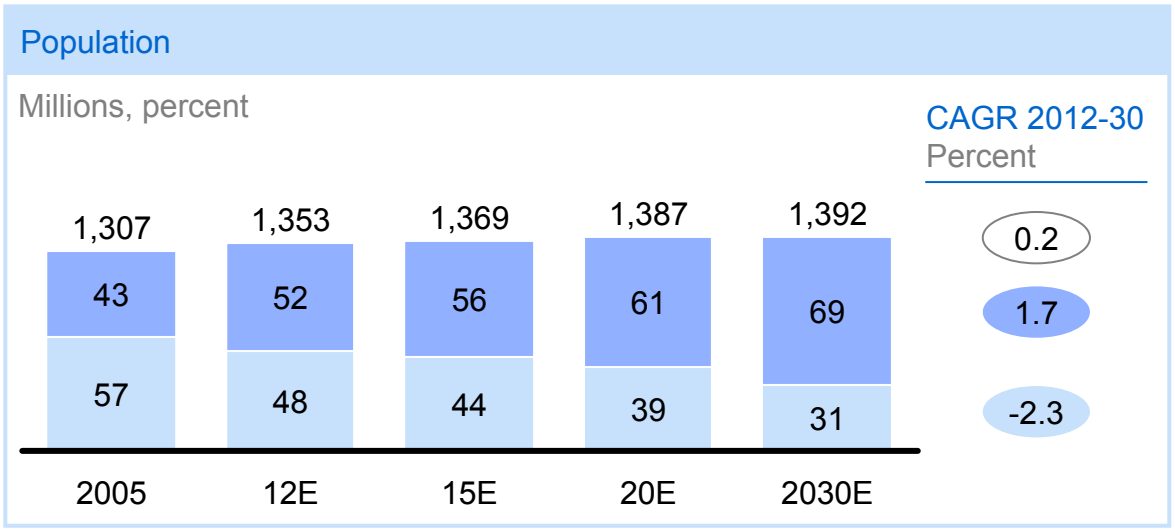
Urbanization is forecast to reach ~70% and about 1 billion population will live in urban area by 2030

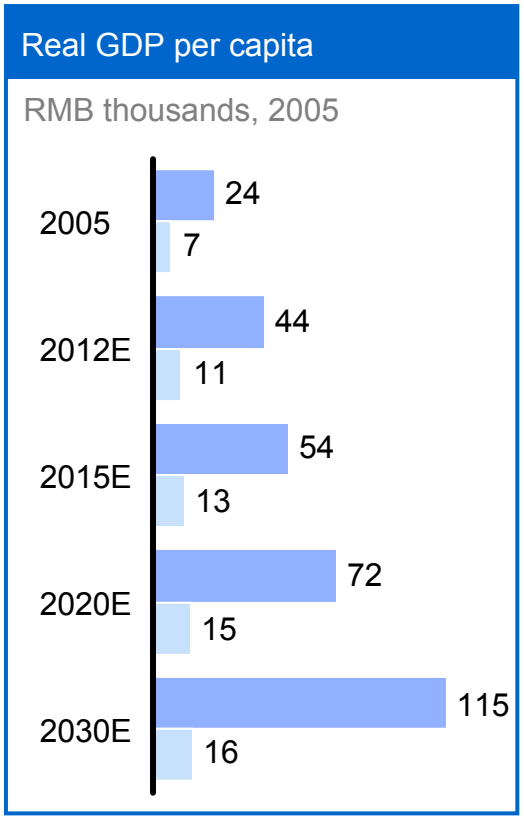


SOURCE: McKinsey Global Institute

Urbanization is forecast to exceed ~70% and contribute to ~95% of GDP by 2030







1 Urban includes 815 cities

SOURCE: McKinsey


Shenzhen, Guangdong, Z
Image © 2010 DigitalGlobe
Image © 2010 TerraMetrics
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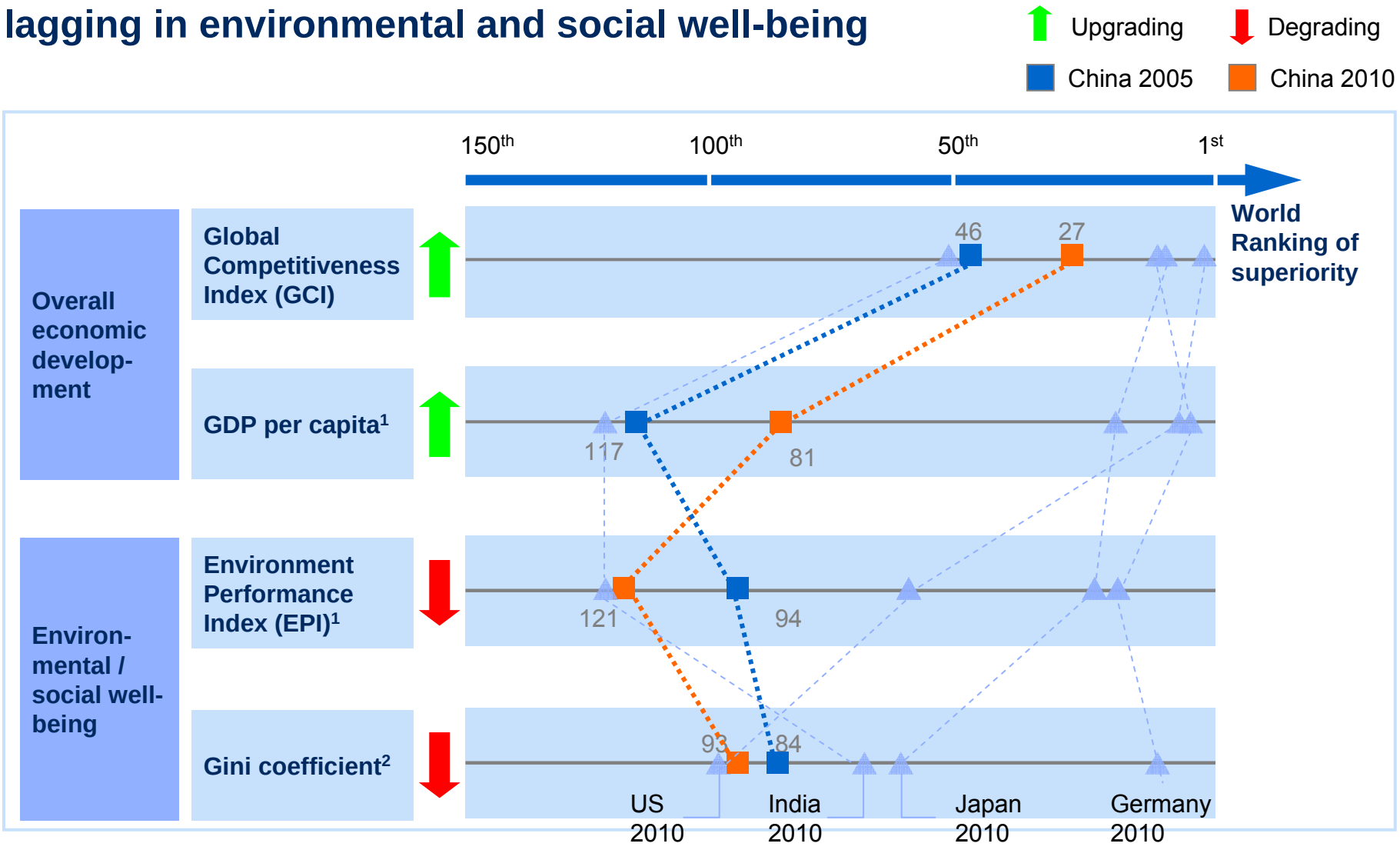
Google
Datas das imagens 10/Dez/2007 - 9/Jan/2009 22°33'30.18" N 113°58'18.10" L elev 0 m Altitude do ponto de visão 39.51 km

External rankings recognize that China is leading in economic growth but lagging in environmental and social well-being



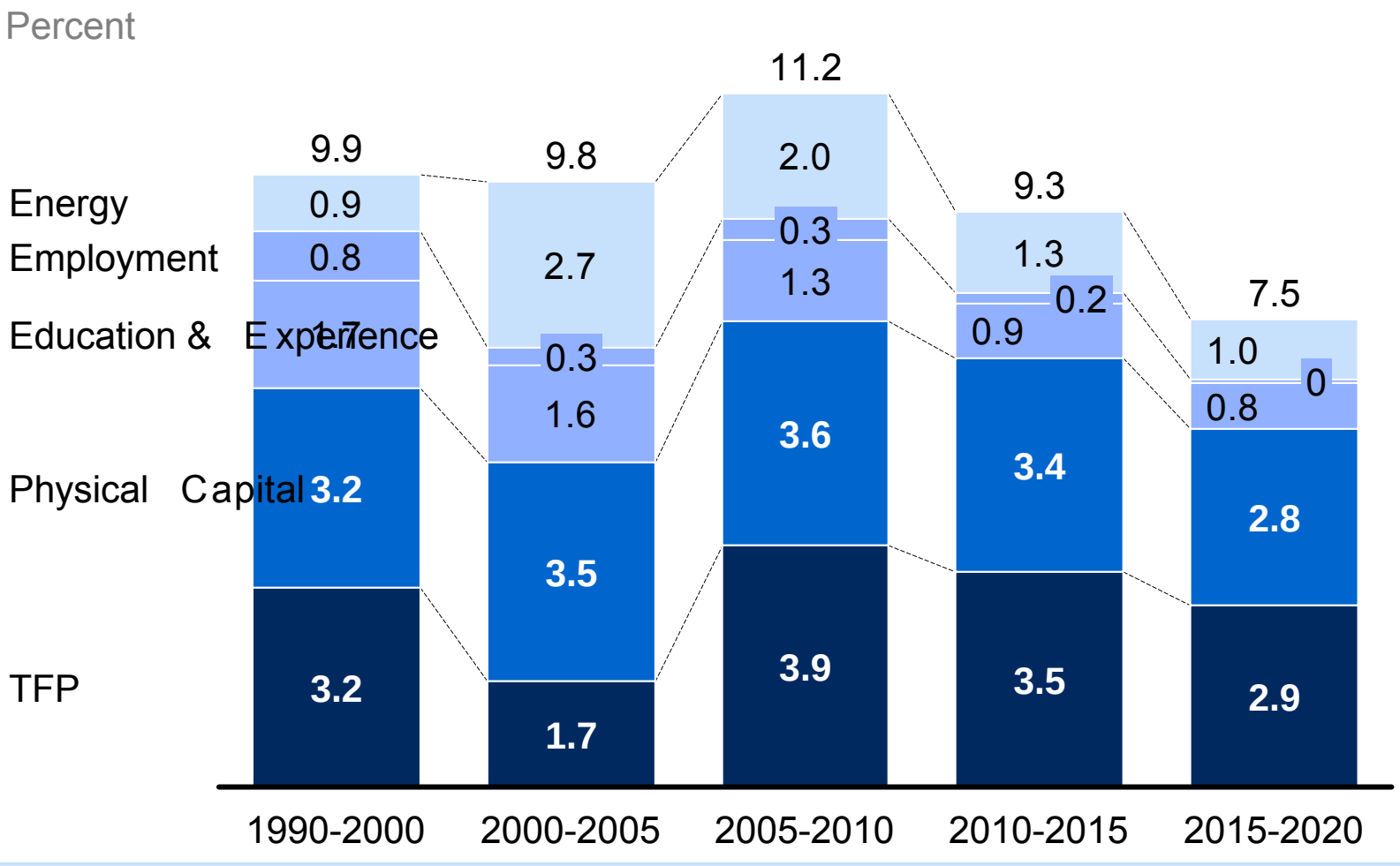
1 2005 and 2009 data for GDP per capita, 2006 and 2010 data for EPI

2 Gini measures wealth distribution fairness. It ranges between 0-1, the closer to 1 the higher inequality. 0.4 is a globally recognized alarm line, and China now boosts Gini > 0.5. Gini coefficient data: 2005 and 2007 for China, 2007 for United States, 2008 for Japan, 2006 for Germany, 2004 for India

SOURCE: World Bank, World Economic Forum, Yale Center for Environmental Law and Policy, United Nations Development Program, CIA World Fact Book

Productivity has overtaken fixed capital formation as a contributor to China's growth

Decomposition of baseline China GDP growth, 1990-2020



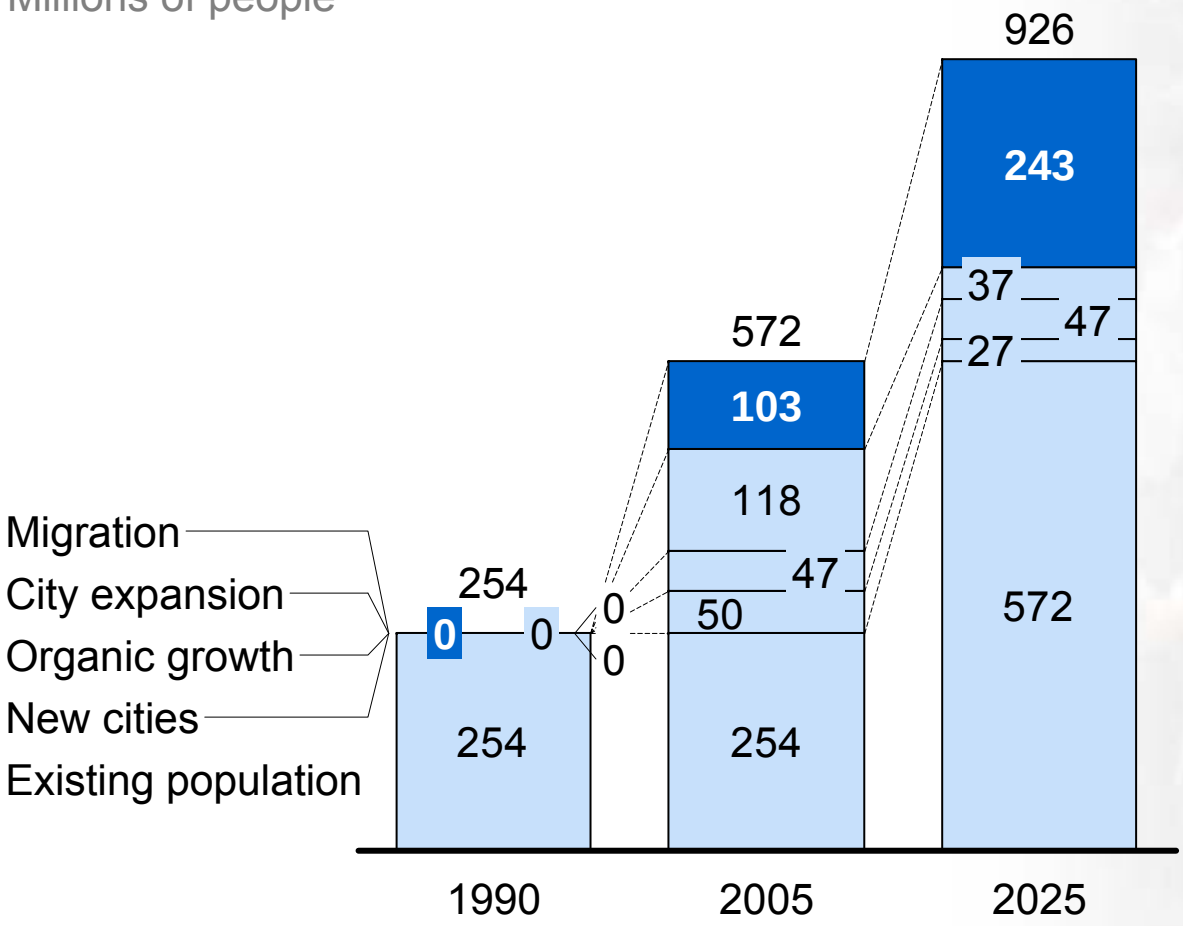
SOURCE: CMU, McKinsey Global Growth Model, v3.5

In China migration will be the driving force of future urbanization

TREND LINE FORECASTS

Sources of urban population increase

Millions of people

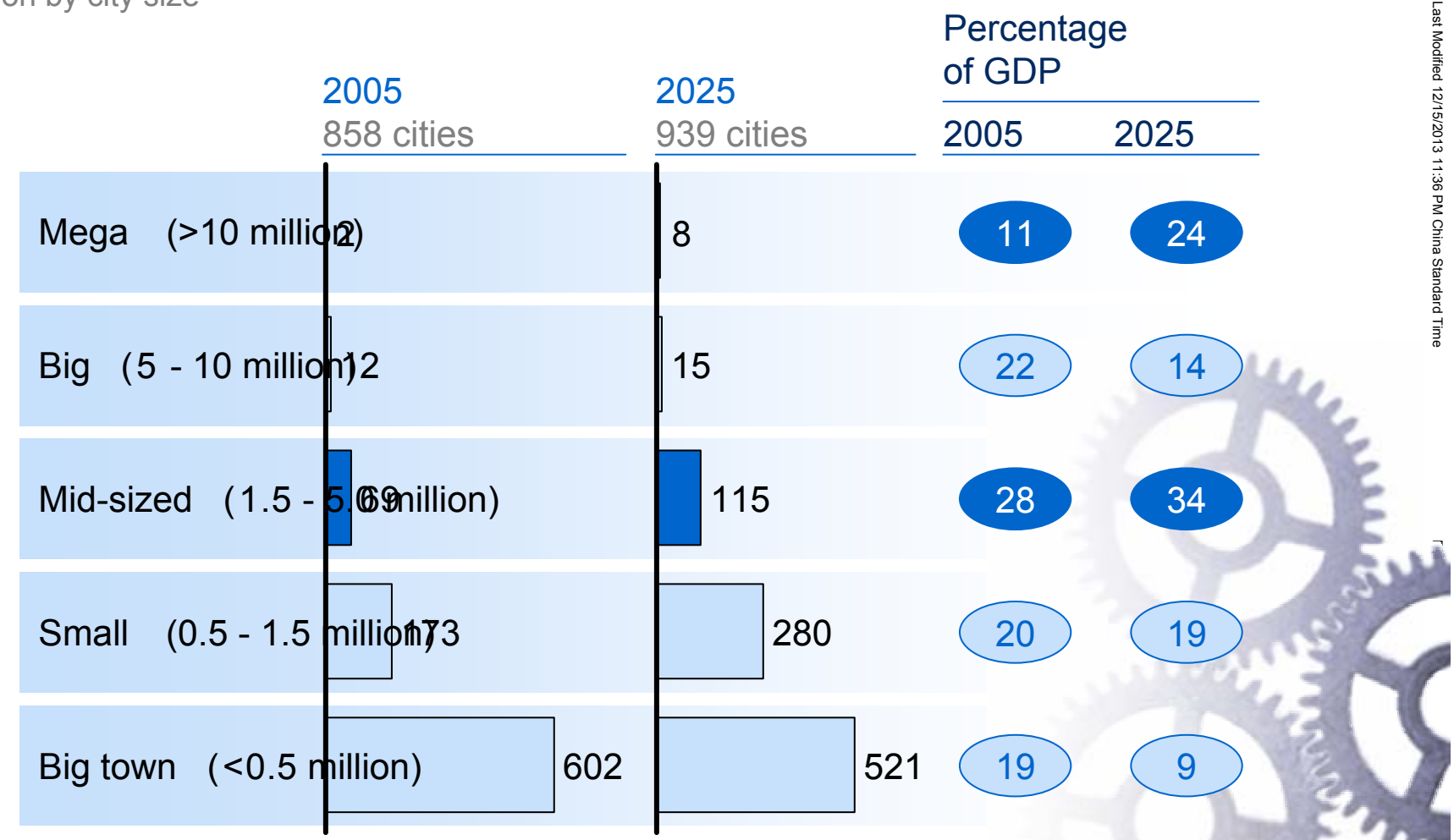


- Migration will drive almost 70 percent of urban population growth from 2005 to 2025
- By 2025, existing migrants (103 million) and new future migrants (243 million) will represent almost 40 percent of the total urban population
- Migration trends could be further boosted and accelerated if recent land reform gets fully enacted

SOURCE: McKinsey Global Institute CAC model, McKinsey Global Institute analysis

Mega and midsized cities will be the engine of China's economic growth

Distribution by city size



1 From the MGI model, the number of new cities between 2000 and 2005 was nine, accounting for about half a percent of total urban population

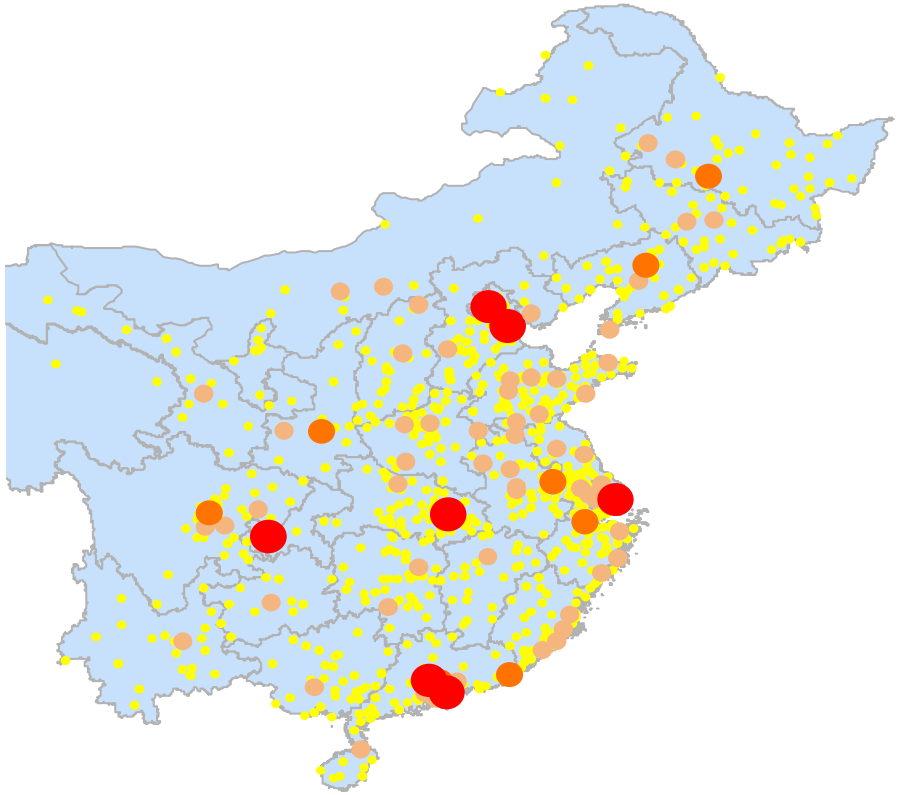
SOURCE: McKinsey Global Institute China All City Model, McKinsey Global Institute analysis

Expansion of smaller cities is expected to account for the largest share of urban GDP growth through 2030.

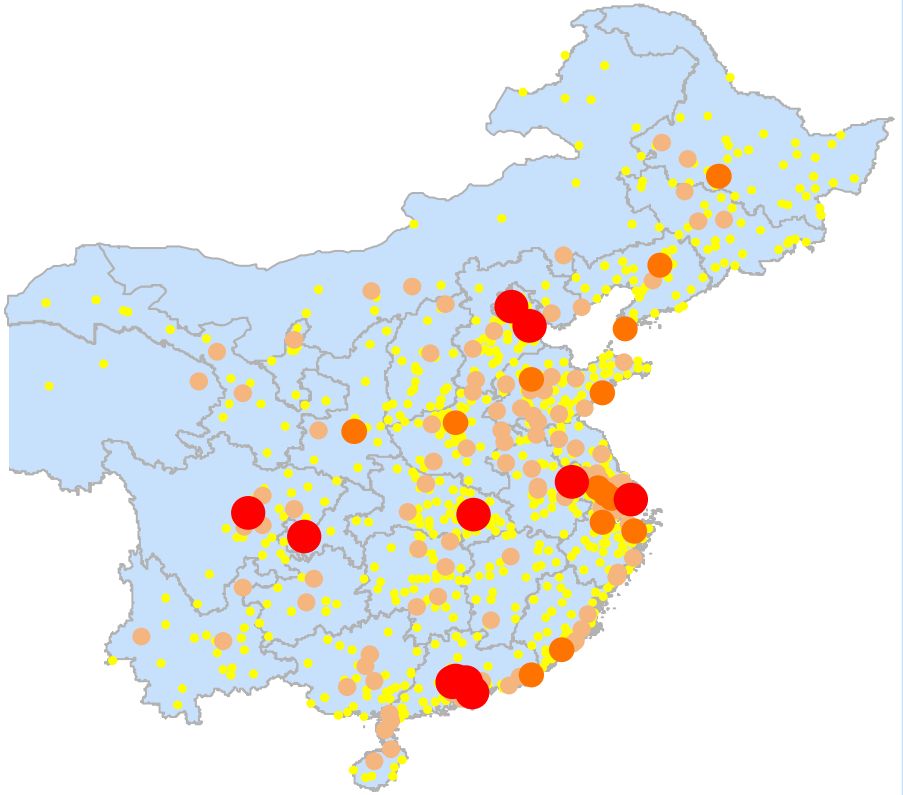
City by urban population size in million

- Small: <1.5
- Mid-size: 1.5–5.0
- Big: 5.0–10.0
- Mega: ≥10.0

China's city landscape by population size at 2012



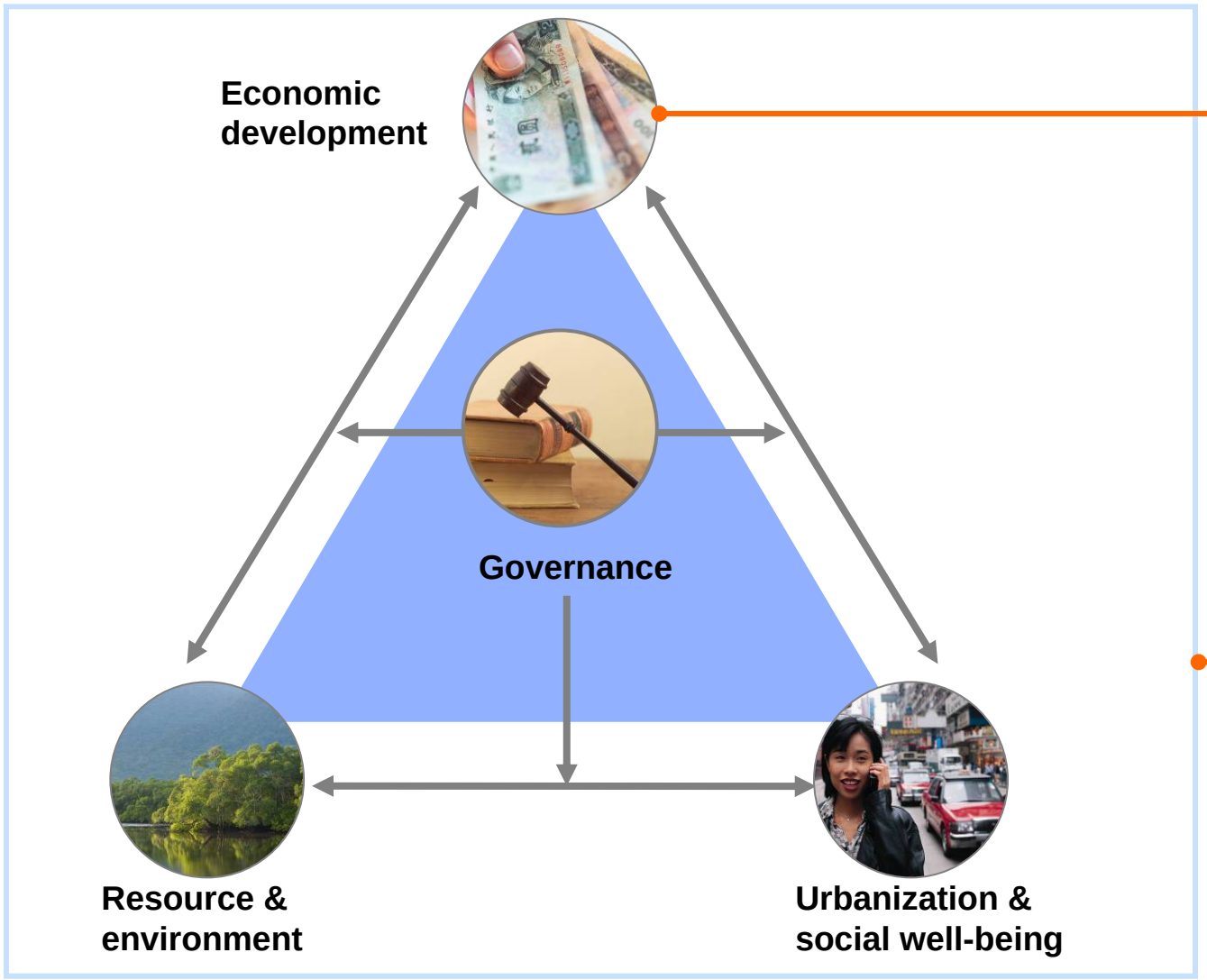
China's city landscape by population size at 2030



- China will have 11 megacities at 2030, compared to 7 at 2012
  - The 11 megacities include cities from southwest and central regions such as Chengdu, Chongqing, and Wuhan
- The current small cities will grow rapidly and contribute to 40% of China's urban GDP growth through 2030

Source: McKinsey Insights China

Moving forward, Chinese government needs to realign among economic development, resource / environment and social wellbeing…



Focus of the past: to drive economic growth

Focus of the future: to balance among all the 3 factors, aided by continuous governance reform

SOURCE: McKinsey

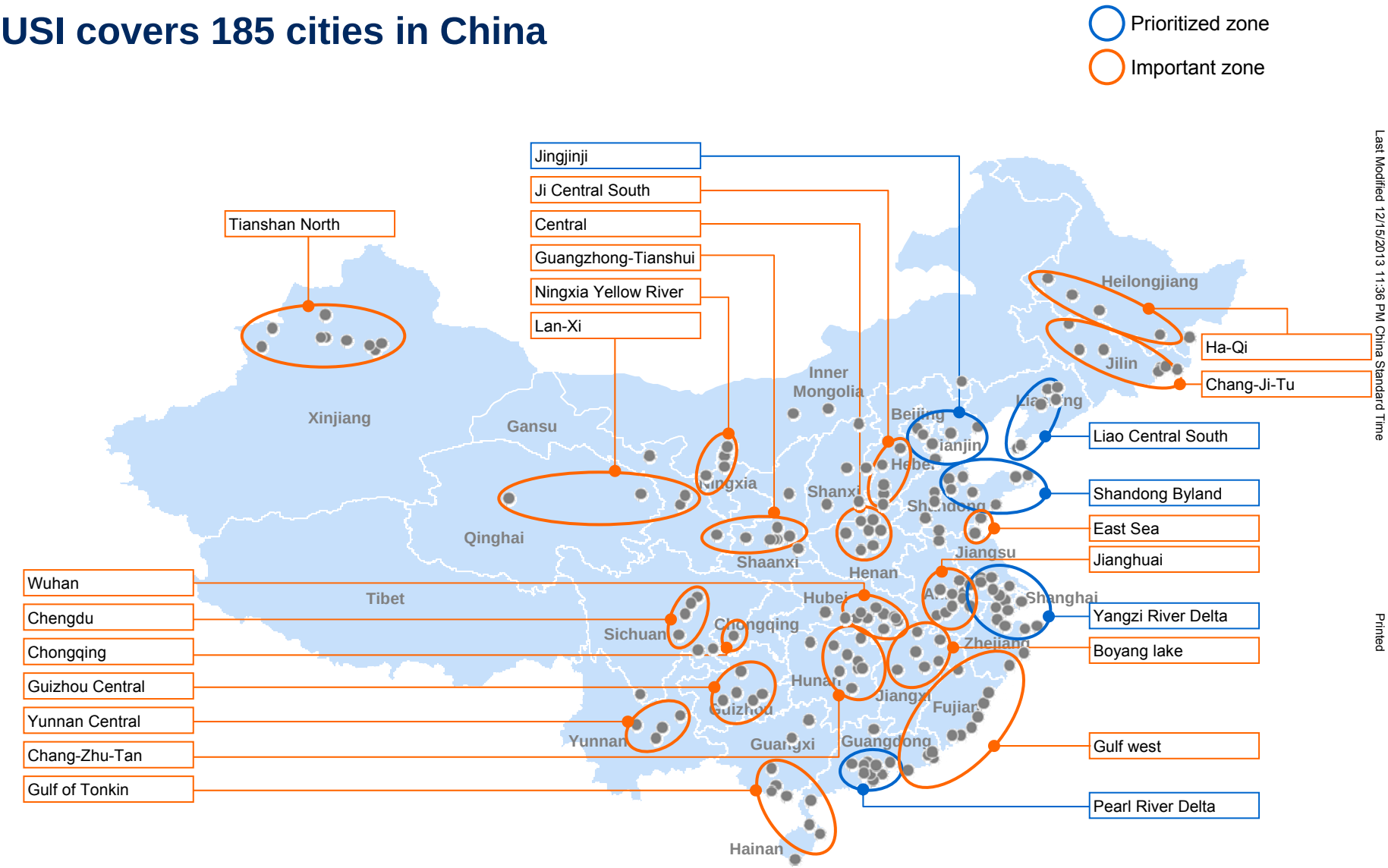
Urban Sustainability Index provides a comprehensive city sustainability picture of China

Category (weight = 100%)		Components (weight within category=100%)	Indicators
Society (33%)	Social welfare (33%)	Employment (25%)	Urban employment rate (%)
		Doctor resource (25%)	Number of doctors per capita (per thousand persons)
		Education (25%)	Middle school students in young population (%)
		Pension (13%)	Pension security coverage (%)
		Healthcare (13%)	Health care security coverage (%)
Environ-ment (33%)	Cleanness (17%)	Air pollution (11%)	Concentration of SO2, NO2, PM10 (mg per cubic meter)
		Industrial pollution (11%)	Industrial SO2 discharged per unit GDP (tons per bn RMB)
		Air qualified days (11%)	Days of air qualified equal or above level II [1](%)
		Waste water treatment (11%)	Wastewater treatment rate (%)
		Household waste management (5%)	Domestic waste treated (%)
	Built environment (17%)	Urban density (11%)	Persons per square kilometer of urban area
		Mass transit usage (11%)	Passengers using public transit (per capita)
		Public green space (11%)	Area of public green space (%)
		Public water supply (5%)	Public water supply coverage (%)
		Internet access (11%)	Household access to Internet (%)
Economy (17%)	Economic development (17%)	Income level (33%)	Disposable income per capita
		Reliance on heavy industry (33%)	GDP from service industry (%)
		Capacity investment (33%)	Government investment in R&D (per capita)
Resources (17%)	Resource utilization (17%)	Energy consumption (33%)	Total energy consumption (SCE per unit GDP)
		Power efficiency (33%)	Residential power consumption (kwh per capita)
		Water efficiency[2] (33%)	Total water consumption (liters per unit GDP)

1. Air qualified days defined as days qualified equal or above Air Pollution Index level II. There are six levels by API. Level II means air quality is general acceptable to public, except for specially sensitive population.
2 Cities are classified by water resource and then are scored within their own group to minimize distortion by natural water resource

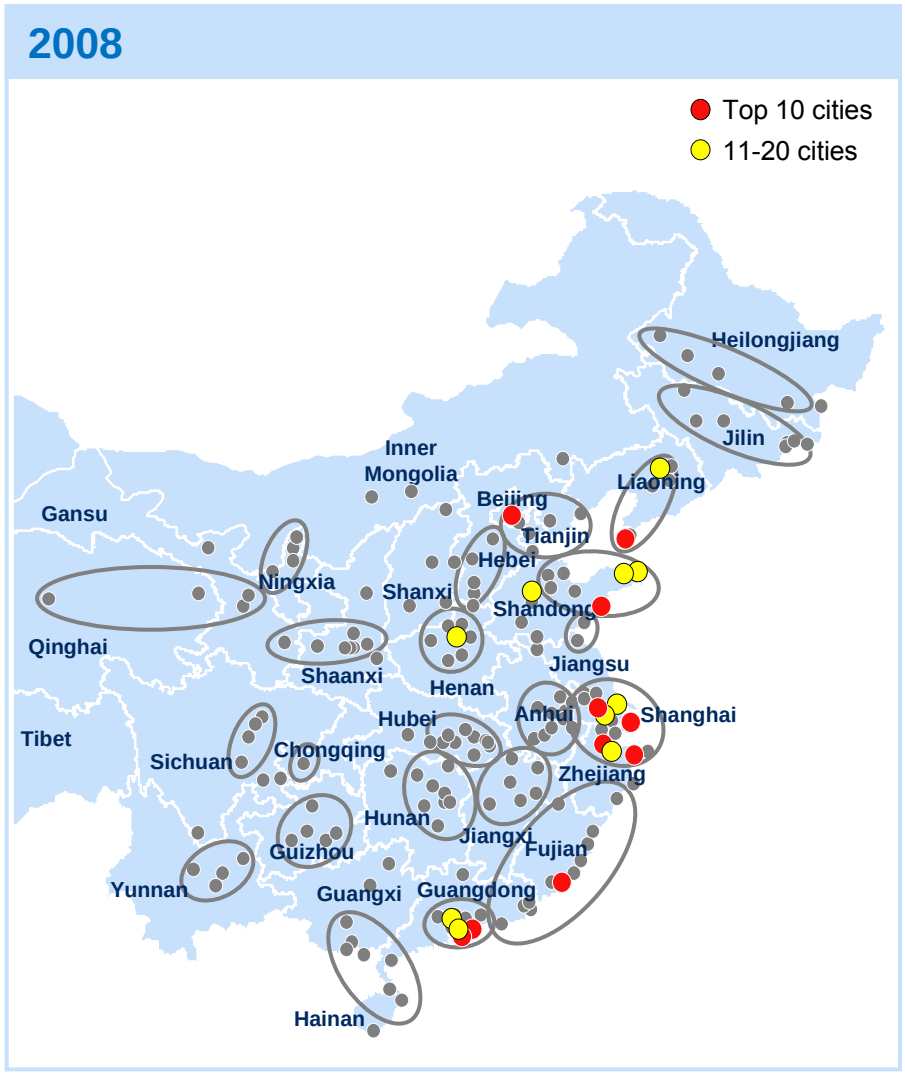
SOURCE: McKinsey analysis, UCI

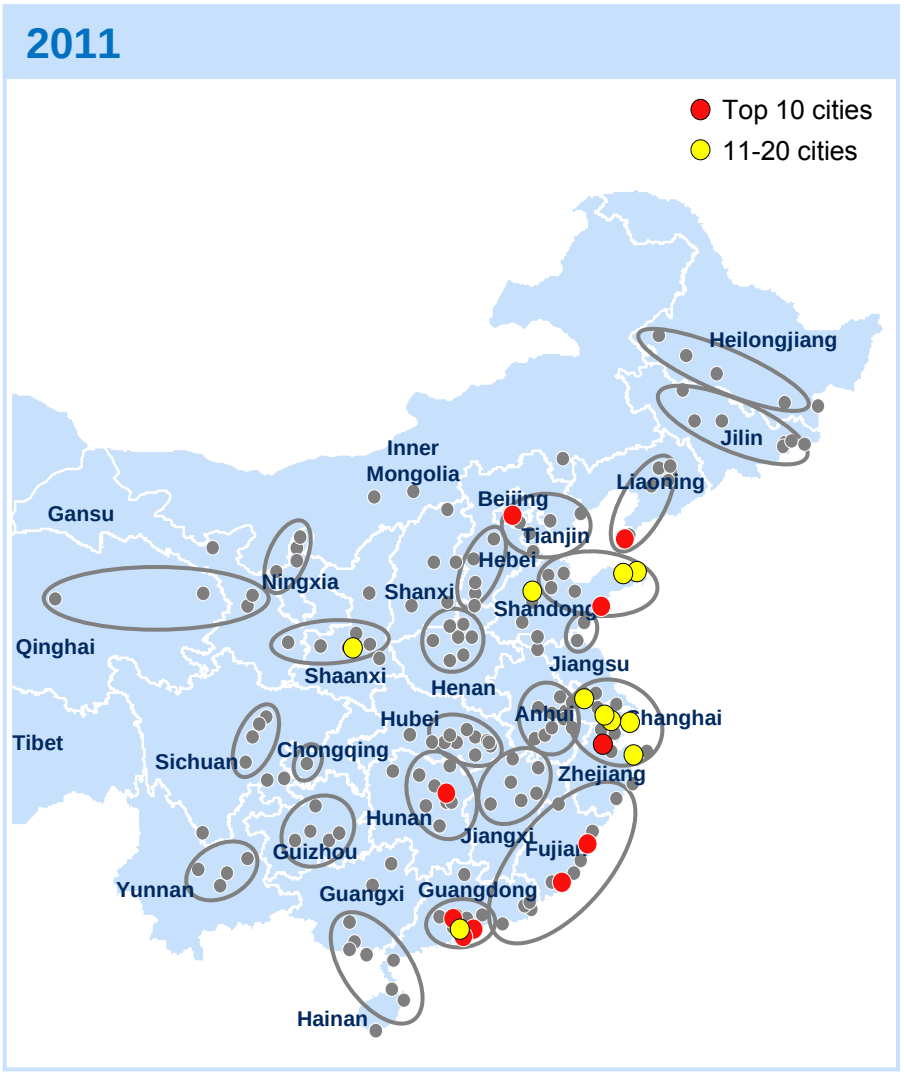
USI covers 185 cities in China



Source: McKinsey analysis, UCI

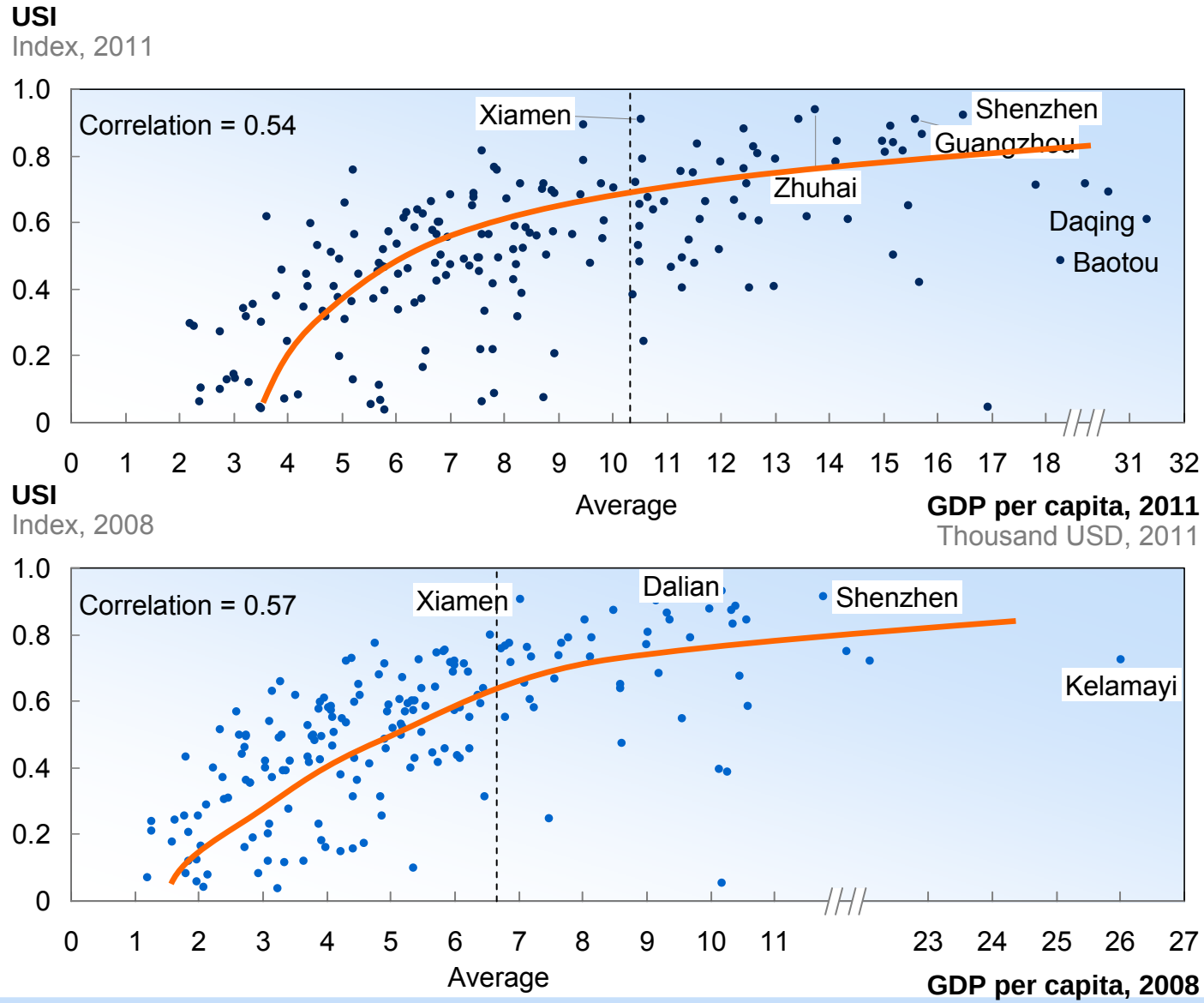
Most cities with the best sustainability performance are located in Coastal and Eastern regions





Source: McKinsey analysis; UCI

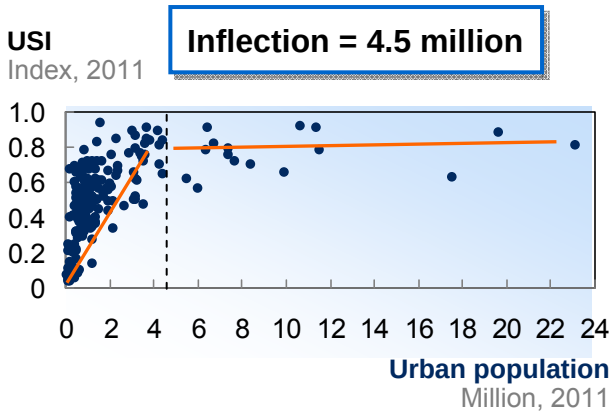
In general, high level of GDP income per capita suggests good performance in sustainability

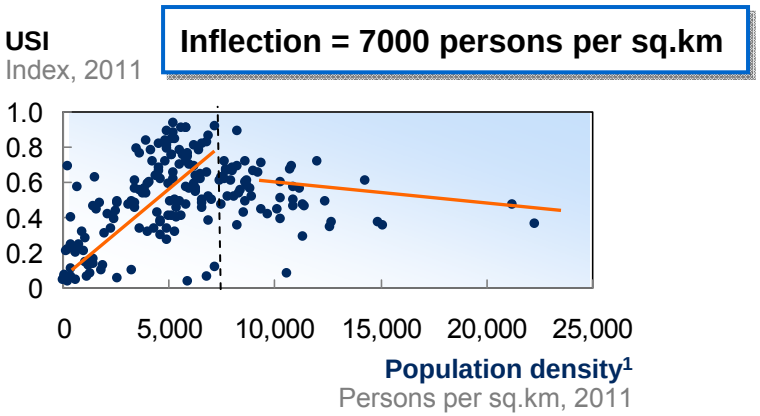


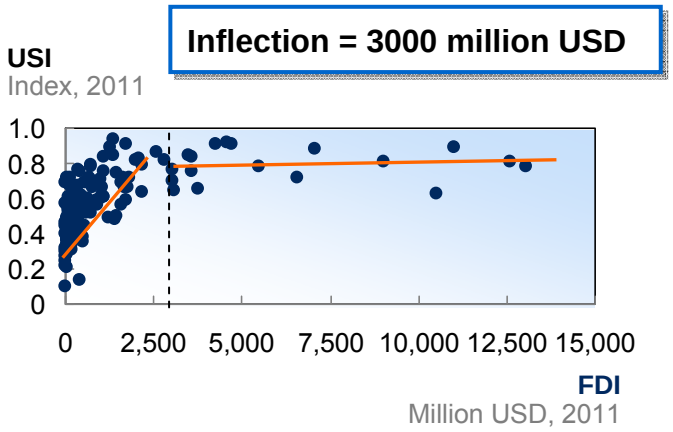
- **Top performed cities in sustainability usually stand at a high level of GDP per capita**
- **The shape of the correlation curve remains similar to the results in 2008**

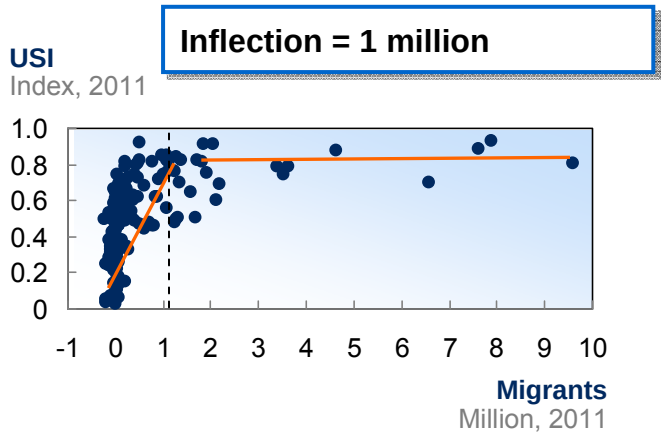
Source: McKinsey analysis; UCI

Population, population density, FDI and migrants show different impact on sustainability performance





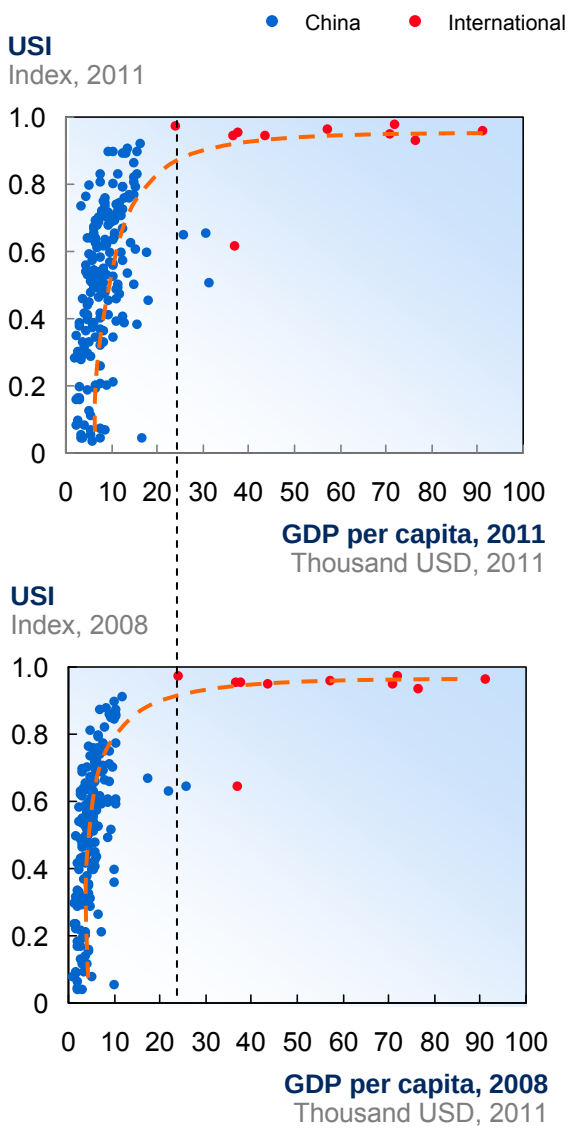


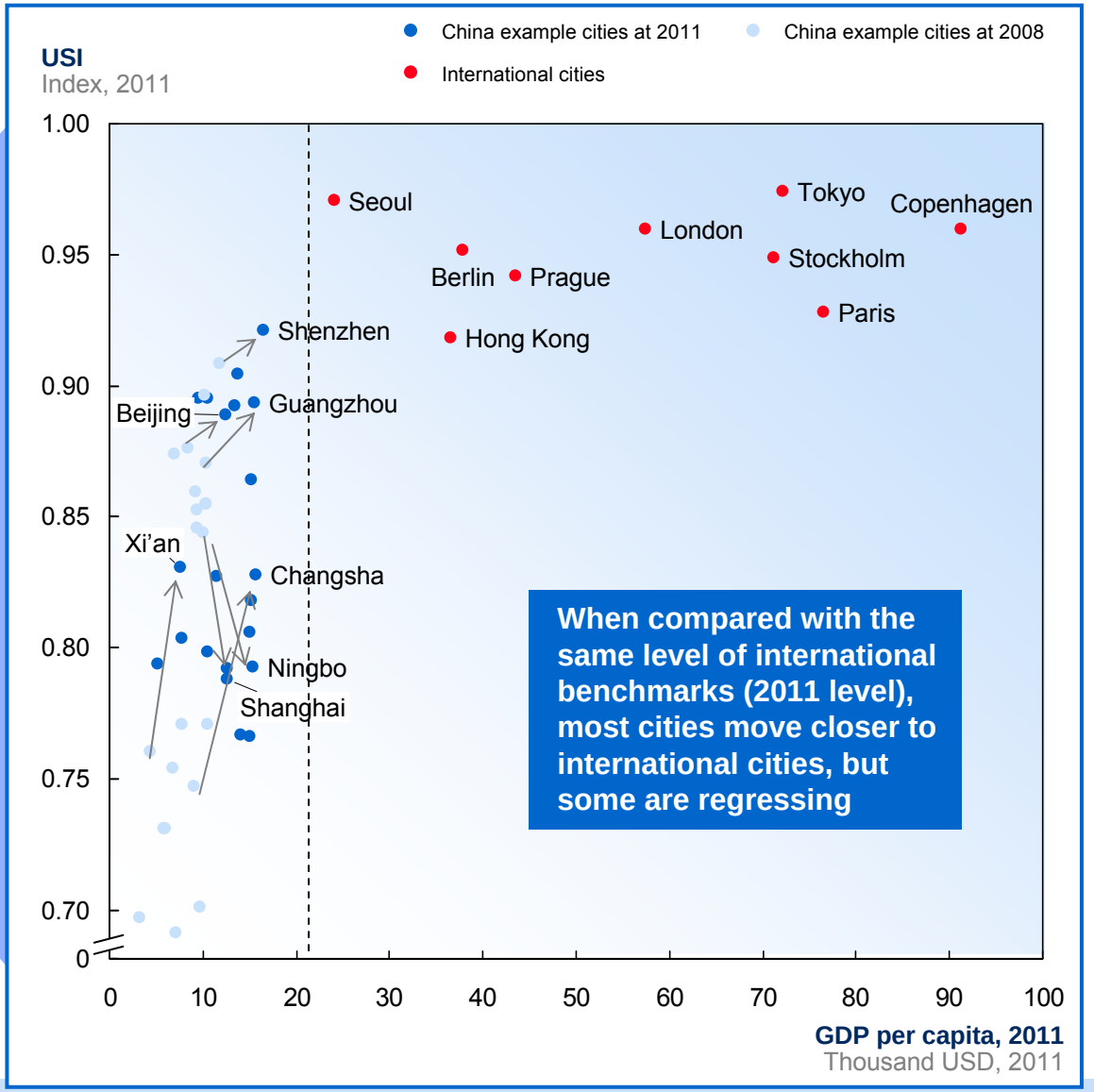


1. Urban built area population density

Source: McKinsey analysis; UCI

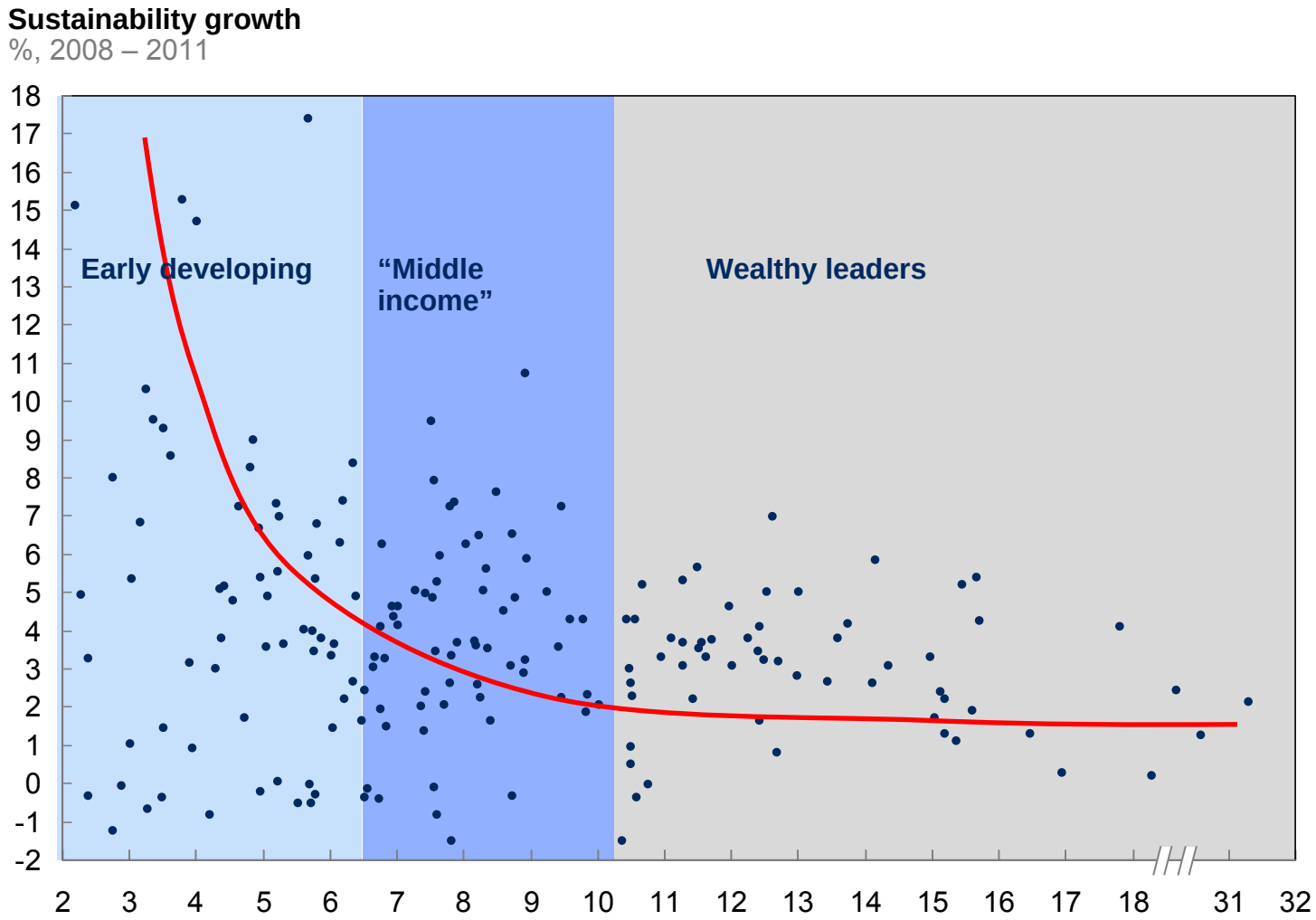
Although sustainability in China is improving in recent years, it still has a long way to close the gap with international standards for most of the cities





Source: McKinsey analysis; UCI

Wealthy cities usually have small sustainability growth



Source: McKinsey analysis; UCI

Top 10 cities with the biggest sustainability improvement at each economic stage

2008-2011 growth

Rank	Wealthy leaders		Middle income		Early developing	
1	Yangzhou	7%	Fanggangcheng	11%	Jieyang	11%
2	Yantai	6%	Beihai	9%	Xuancheng	9%
3	Hefei	6%	Yibin	8%	Anshun	8%
4	Yuxi	5%	Jiangmen	8%	Zhongwei	8%
5	Rizhao	5%	Kunming	7%	Weinan	7%
6	Benxi	5%	Fuzhou	7%	Fuzhou	7%
7	Tongling	5%	Loudi	7%	Chaohu	7%
8	Jinchang	5%	Zhanjiang	7%	Huanggang	7%
9	Foshan	5%	Binzhou	6%	Shantou	6%
10	Xinyu	5%	Guilin	6%	Mianyang	6%

Source: McKinsey analysis; UCI

Key lessons from top case cities

Key success factors to improve sustainability

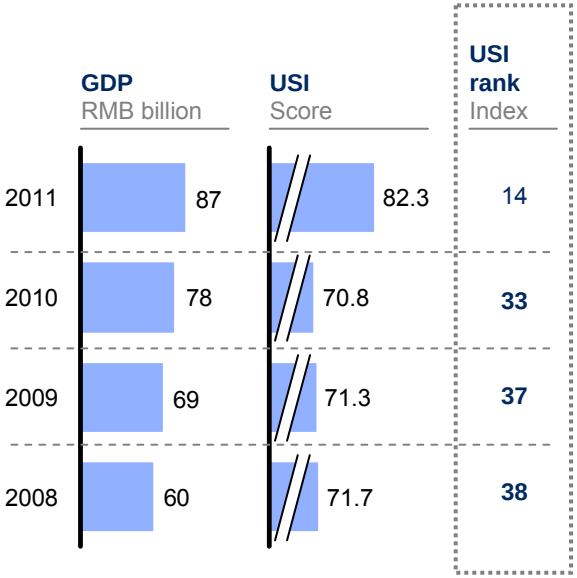
- Adopt scientific design of city public transit system
- Encourage service sector growth and R&D center development
- Improve urban security network to provide better benefit
- Improve minimum wage and income subsidy/transfer
- Improve waste management
- Aggressively push for emission control and green auto usage
- Leverage the opportunity of undertaking world-class events
- Effectively integrate migrants

Source: McKinsey analysis, UCI

Case city: Yangzhou made a lot of efforts in expanding security coverage, promoting service sector growth and curbing pollution

Improved | Regressed | No big change

Yangzhou's GDP grew at 13% annually from 2008 to 2011, at the same time its sustainability improved remarkably



Yangzhou made a lot of efforts in expanding security coverage, promoting service sector growth and curbing environment pollution

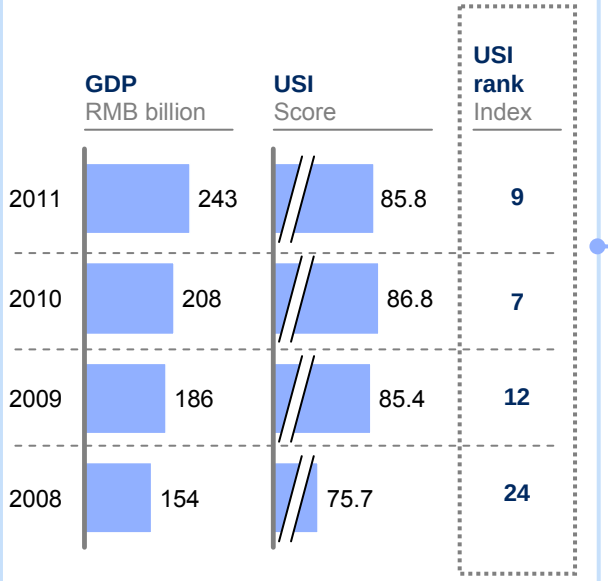
Category	2011 rank	2008 rank	Key driving forces
Society	43	77	▪ Middle school enrollment increased a lot since 2008 ▪ Pension based increased by 10% in 2011 ▪ The farmers whose land was acquired or lost participated in pension insurance in 2011 ▪ Urban basic health care insurance coverage expanded to unemployed citizens ▪ Increased special fund, e.g. expanded the coverage of inspection of Cervical cancer and breast cancer
Economy	31	53	
Resource	24	14	▪ Increased usage of FDI in service, special focus on the development of information and technology services, and living services ▪ Encouraged international service transformation ▪ Established special funds to promote new industries
Environment - cleanness	16	30	▪ Set up 30 eco-cycle pilot projects and 28 energy-efficient demonstration companies to promote green application ▪ Pushed for pollution control and ecological restoration, implemented "emission reduction project", "water and sky clean project" ▪ Started to impose dust and emission charges in 2011 to curb air polution
Environment – built environment	60	70	

SOURCE: McKinsey analysis, UCI

Case city: Changsha advanced to top 10 by expanding security coverage, improving benefits and controlling auto emission

Improved | Regressed | No big change

Changsha's GDP grew at 16% annually from 2008 to 2011, at the same time its sustainability improved remarkably



Changsha made a lot of efforts in expanding security coverage, improving benefits and controlling auto emissions in the past

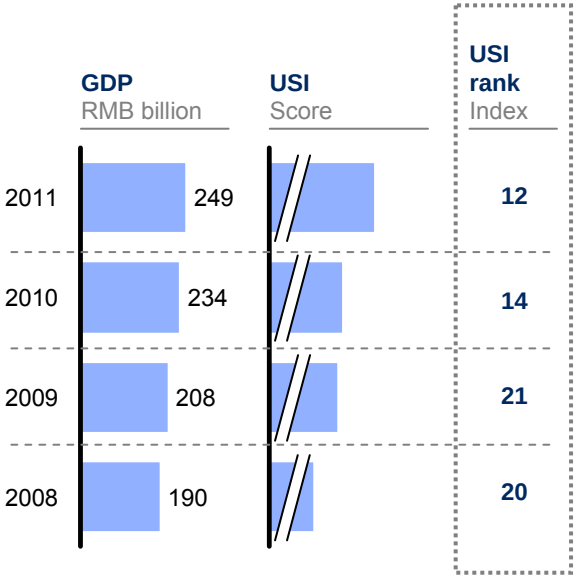
Category	2011 rank	2008 rank	Key driving forces
Society	32	74	▪ Government largely increased education expenditure and encouraged cooperatively establish schools that lead to improved education resource ▪ Achieved pension system full coverage to urban and rural households ▪ Established basic pension adjustment mechanism, eg. people with no income, no working ability, no legal guardian or with severe psychosis can enjoy free medical service ▪ Labor compensation extended to all workers with work related injuries
Economy	10	9	
Resource	54	50	
Environment - cleanness	18	91	▪ Since 2010, Changsha established 27 test lines for auto emissions. Those who cannot pass the test would not get the annual qualification certificate from the police and transportation departments ▪ Changsha launched the construction project of wasted water treatment for 18 counties in 2010.
Environment – built environment	25	5	▪ More than 1/3 of bus stations are utilized very little due to lack of necessary facilities ▪ Bus line designed can not satisfy demand of increasing population and caused low utilization or long waiting line.

SOURCE: McKinsey analysis, UCI

Case city: Ji Nan improved sustainability mainly by aggressively pushing for the usage of energy-saving auto and strengthening pollution control

Improved | Regressed | No big change

Jinan's GDP grew at 9% annually from 2008 to 2011, at the same time its sustainability improved remarkably



Jinan aggressively pushed for the usage of energy-saving auto and strengthened pollution control in the past

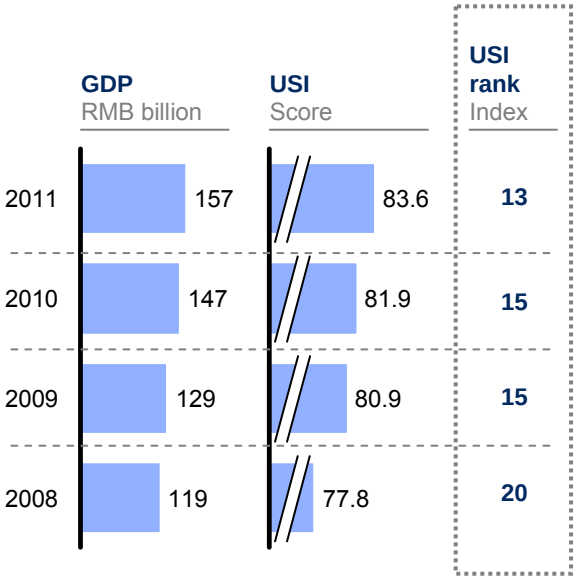
Category	2011 rank	2008 rank	Key driving forces
Society	30	44	▪ Pushed hard health care security full coverage of urban and rural households ▪ Established international health care service centers ▪ Intensified basic healthcare service and reduced personal part of medical cost
Economy	18	19	
Resource	41	47	▪ Upgraded central heat supply network ▪ Offered tax reduction to companies with effective energy-saving and emission control measures ▪ From 2009, implemented multi-level monitoring on city, district and corporate, strengthened monitoring on key industrial pollution source
Environment - cleanness	59	93	▪ Largely pushed dust control ▪ Intensified monitoring on household waste leachate treatment
Environment – built environment	22	25	▪ From 2009, largely developed city transportation by increasing public buses ▪ Aggressively developed energy-saving public transportation

SOURCE: McKinsey analysis, UCI

Case city: Yantai focused on enhancing education and livelihood investment, promoting R&D and curbing air & water pollution

Improved | Regressed | No big change

Yantai's GDP grew at 9% annually from 2008 to 2011, at the same time its sustainability improved remarkably



Yantai focused on enhancing education and livelihood investment, promoting R&D and curbing air&water pollution

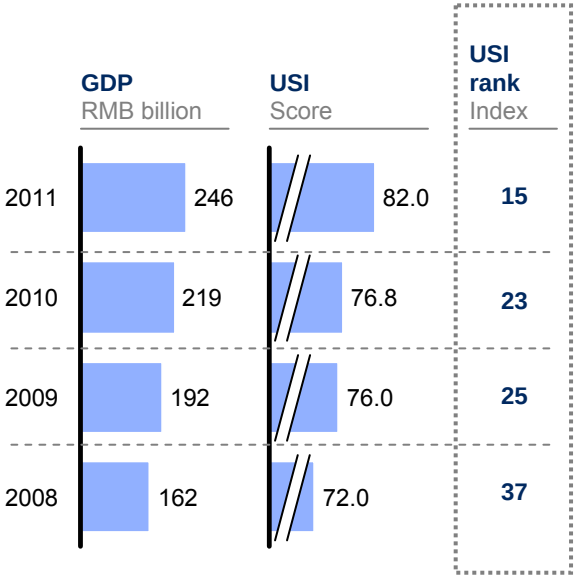
Category	2011 rank	2008 rank	Key driving forces
Society	22	59	▪ Livelihood investment increased by ~25% in 2011, adding 0.19 mn jobs in urban area ▪ Subsidy on medical insurance system increased for both urban and rural residents, with medical reimbursement ratio increased to 85% and 70% respectively ▪ Education infrastructures enhanced with setting up of on-campus security system, and piloting to exempt all tuition and textbook fee for compulsory education
Economy	28	39	
Resource	23	11	▪ Initiated a series of key projects, eg. Haiyang Nuclear power, Wanhua industrial park, Zhangyu industrial park, etc ▪ Established special funding and launched ~30 major science & technology projects, also actively introduced in high-level scientific and technology to promote innovation ▪ Encourage companies to set up R&D center, marketing and procurement centers ▪ Focus on technology transform with promotion of 10 industrial projects worth RMB 50 bn
Environment - cleanness	19	14	
Environment – built environment	67	78	▪ Set up regional air pollution control team to enhance inner city air quality and aim to reach national II level by 2015 ▪ Published water treatment management to curb water pollution

SOURCE: McKinsey analysis, UCI

Case city: Xi'an has large improvements in all round sustainability due to expansion of security system, increased income , government's focus on R&D and waste management

Improved | Regressed | No big change

Xi an's GDP grew at 15% annually from 2008 to 2011, at the same time its sustainability improved remarkably



Xi'an has large improvements in all round sustainability categories mainly due to expansion of security system, increased income , government's focus on R&D, and waste management control

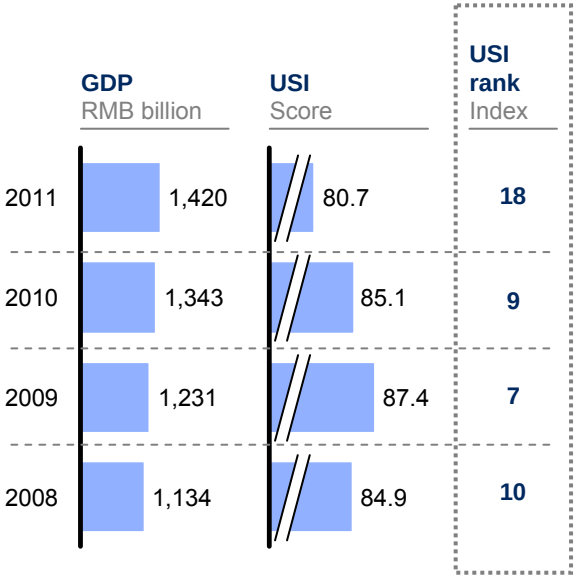
Category	2011 rank	2008 rank	Key driving forces
Society	14	31	▪ Largely improved social security coverage since 2008, e.g. expanded living subsidy for retired citizens, expanded major diseases coverage of outpatient, expanded general healthcare claim coverage, raised pension payment and expanded coverage to more counties
Economy	37	65	▪ Raised average salary standard and subsidy to maintain employment rate ▪ Increased income transfer, e.g. increased living subsidy for senior citizens ▪ Rental and interest income also increased due to increasing property stock and price
Resource	14	30	▪ Targeting to establish the world class industrial park, e.g. Caotang industrial park ▪ Started best practice program of R&D resource consolidation, established sharing and trading platform of R&D resource in 2011
Environment - cleanness	99	136	▪ Built 12 urban waste water treatment plants in 2011 ▪ Launched emergency response program of household waste treatment for 2010 World Horticulture Expo
Environment – built environment	5	16	▪ Set special bus ways in 16 main roads to reduce traffic congestions ▪ Largely increased internet penetration thanks to popularity of smartphone, reducing fees of mobile internet and diversified application of mobile internet

SOURCE: McKinsey analysis, UCI

Case city: Shang Hai experienced sustainability pressure mostly due to fast increase of migrant population

Improved | Regressed | No big change

Shanghai's GDP grew at 8% annually from 2008 to 2011, but at the same time its sustainability regressed remarkably



Shanghai experienced sustainability pressure mostly due to fast increase of migrant population

Category	2011 rank	2008 rank	Key driving forces
Society	64	23	▪ Fast increase in migrant population but not covered by local security network ▪ Doctor numbers declined due to the high entry criteria for doctors to join famous hospitals but low income in private or normal hospitals. ▪ Pension substitute rate of Shanghai declined to the lowest in China due to short years' pension payment by migrants
Economy	2	2	
Resource	29	42	
Environment - cleanness	81	70	▪ Waste management was temporarily improved to a high standard in 2010 by World expo, but did not sustain in 2011
Environment – built environment	14	4	▪ Fast increase of migrants gave large pressure to city's public transportation, water supply and internet coverage

Shanghai has large migrant population who does not have social security benefits like local residents. It is harder and harder for them to get local hukou. ------- source??

Well-known hospitals in Shanghai only recruit doctors with very high qualification. However, primary hospitals can't attract doctors due to poor salary and welfare. These two reasons lead to the fact that the number of doctors per 1000 inhabitants decreased from 2008 to 2011. ----- Source??

SOURCE: McKinsey analysis, UCI

"Some people in rural areas and cities should be allowed to get rich before others. When some areas and people become rich, they are encouraged to help poor areas and people get rich, so that all the people in the country will ultimately become rich and prosperous."

- Deng Xiaoping