Based on our data, we selected nine cities for more in-depth analysis. These cities are at varying levels of development; some have made significant strides in their sustainability performance, while others have not. We also conducted interviews with local government officials to understand how they approached issues of sustainability and what factors affected their progress. Survey responses show that most officials agree that the evaluation made by USI is consistent with their own perceptions of their cities—a finding which vindicates the accuracy of USI.

**Xi’an**

**City and sustainability overview**

Xi’an, historically known as Chang’an, is the capital of Shaanxi province in central China. Well known as the home of the terra cotta soldiers, Xi’an is a gateway and transit hub linking the northwest to the rest of the China. The city has a built-up area of 343 square kilometers, with 5.7 million residents in city districts. Xi’an is a large-sized economy. From 2008 to 2011, Xi’an’s GDP rose from RMB 162 billion to 246 billion, and recorded an above-average economic growth rate (15%). In 2011, GDP per capita of Xi’an reached RMB 36.7 thousand. The State Council listed Xi’an as a “national historic and cultural base” and started to develop the city into an international metropolis.

On both USI and its sub-category metrics, Xi’an has delivered significant improvement across the board socially, economically, environmentally, and in terms of resource use. Its USI ranking improved from the 36th in 2008 to 17th in 2011, the fastest rate of improvement (5%) recorded among cities of large economic size. Key contributors to the city’s improvement in ranking include: 1) continuous improvement of its social security system, 2) higher disposable income; and 3) energy saving, carbon abatement, and waste reduction efforts.

Xi’an showed significant improvement in both economic sustainability and integrated resource utilization, and its momentum is strong. We believe its experience can therefore offer valuable lessons for other cities.

**Key experiences and features**

1. **Economic sustainability**

   Xi’an’s economic ranking has improved from 65th place in 2008 to 45th in 2011. Here are some of the city’s most important economic achievements:

   **Boosting income levels:** The per-capita disposable income of urban residents increased from RMB 15,207 (US$2,477) in 2008 to RMB 25,081 ($4,232) in 2011; over the same period and per-capita net income of rural residents improved from RMB 3,808 ($620) to RMB 9,788 ($1,594) indicating a significant growth in the overall income level of the residents of Xi’an.

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1 Land area and population numbers are 2011 data, referring to city built-up area and city district population respectively; same for the other cities of this paper.

2 GDP and per-capita GDP numbers are in real values at constant prices of 2005, referring to real urban GDP estimated by McKinsey Global Institute China model 2013 version; same for the other cities of this paper.
Increasing investment: The city has made big investments in social fixed assets, urban maintenance and construction projects, targeted industries, and civil engineering projects. Xi’an has also leveraged RMB 100 billion in loans to provide strong support its development programs.

Upgrading priority industries: Xi’an has five “pillar” industries including High-tech manufacturing, Equipment manufacturing, Tourism, modern Service and Culture; these represent almost half (47.8%) of the city’s total GDP during 2008 to 2011. The number of medium-large industrial enterprises has increased by more than 100 with their industrial added value achieving RMB 70+ billion.

Developing city districts and development zones: The city is fully committed to the development of “4 zones, 1 harbor, and 2 bases. The city has pushed aggressively to build world-class high-tech industrial parks and invested RMB 100 billion to build advanced manufacturing bases.

(2) Social sustainability
The city’s social sustainability ranking has improved from 30th place in 2008 to 11th in 2011. The following efforts have played a role in this success.

Improving the social security system: Between 2008 and 2012, Xi’an invested more than RMB 100 billion in civil projects, which accounted for about 70% of total spending. All registered residents of Xi’an now have basic pension and medical insurance. The city also launched social pension insurance for urban and rural residents to address the issue of integrating uninsured retirees from collectively-owned enterprises into the system. The city has completed the construction of 143,000 housing units for mid- and lower-income families, built 150 community health centers, renovated or expanded 101 rural health clinics, and established 3,117 village health clinics. All government-run grass-roots medical institutions are now under the National Essential Drug system, to manage and monitor appropriate drug usage, price and quality.

Strengthening employment support and unemployment relief: Xi’an actively encourages technology and other start-ups, providing both finance and advice. In 2009 alone, the city issued RMB 267 million worth of small secured loans. It has secured job placements for an additional 110,000 urban workers and job transfers for 650,000 rural workers.

Improving culture and education: Xi’an established a mechanism to provide guaranteed funding for compulsory education and rationalized the allocation of education resources. It has continued its campus safety projects for primary and middle schools; built or expanded 93 kindergartens; and provided additional bus services. For older students, the city is developing new model high schools, while working to improve quality at the regular ones; and it increased support for vocational and special education. In terms of culture, the city has accelerated the development of cultural industries, focusing on building Xi’an’s distinctive traditions.

(3) Resource and Environmental sustainability
Xi’an has also been taking steps to develop and protect its resources; its resource ranking improved from 30th to 15th and its overall environmental ranking from 49th to 25th. Environmental cleanliness, the obvious shortage of Xi’an, has also been improved from the 145th place in 2008 to the 108th in 2011. Specific initiatives include:

Land: Strengthening the protection of ecological resources on the north side of Qinqing Mountain. The local government has cracked down on illegal mining and unplanned development projects to create high-quality scenic areas. Xi’an has completed urban forest development within the Daming Palace Ruins, and is developing ecological corridors.
Determined to ensure that “its mountain stays green and its 8 rivers never run dry” the city has therefore kicked off full-scale Qinling mountain eco-system protection program.

**Water:** Implementing integrated water management for the Wei River, including fully implementing the three-year pollution prevention action plan; minimizing flood risks downstream of the Heihe River; and supporting the Han-Wei water diversion program. The city is also working on the management of smaller rivers, focusing on the upstream areas of the Heihe, Laohe, and Bahe rivers. Till 2012, the city has built water surface of 30 square kilometers, a forestation area of 250 square kilometers, and added 10 square kilometers of urban green space. The Chanba Ecological Zone has also been designated as a national ecological zone.

**Sewage and waste:** A sixth sewage-treatment plant and further construction at two others have been completed. The city also set up sewage/drainage emergency mechanism to ensure the efficiency and quality of drainage and non-hazardous treatment of sewage. A garbage sorting program and strengthened rules regarding car exhaust, dust, and noise pollution are also at work.

**Conservation and air quality:** The city has implemented water-conservation regulations and shut down eight outdated cement production lines to reduce its greenhouse-gas emissions. These and other efforts have resulted in a 5.5% reduction of energy consumption per unit of GDP, and significant reductions in sulfur dioxide (21,500 tons). For four years in a row, the city has achieved second-grade air quality for more than 300 days.

**Urban infrastructure:** The city has completed the replacement of overhead cables with underground cables for some road sections and is gradually bringing store front signage into order and launched landscaping projects for the Train Station Plaza, New City Plaza, and Bell and Drum Towers Plaza. These efforts are also being extended to nearby villages; Xian is managing infrastructure construction and allocating funds to kick off the development of priority sites for building new rural villages. In terms of transport, Xi'an is constructing a metro system, while also expanding road coverage. Public transport is the priority, including a series of bus service lines and harbors.

### Yangzhou

**City and sustainability overview**

Yangzhou is located in the center of Jiangsu Province. Yangzhou is adjacent to the Shanghai and Suzhou areas, and benefits from that city’s economic attractiveness. The city is growing fast, and its 2.3 million people in city districts had a per capita GDP of RMB 61,000 in 2011. It is a mid-sized economy with GDP of RMB 87.4 billion in 2011, growing at a rate of 13% from 2008 to 2011.

Between 2008 and 2011, Yangzhou performed impressively in terms of all aspects of sustainability. Its USI ranking improved from 37th to 16th, with a sustainability growth rate of 6%. Such high growth rate led Yangzhou to a growth ranking of the 4th place in mid-sized economies.

**Key experiences and features**

**1. Economic and resource sustainability**

Economically, the most important reason for improvement is the increase in foreign direct investment (FDI). In 2011, 11 VC funds were launched, with total investment reaching RMB 2 billion. Equity funds such as Hudson Capital and CCB International have also invested RMB 3-5 billion. The second factor is that the city has developed several effective policies
and plans to encourage technology development and innovation, including an incubator and strategic research institute. Third, the technology service sector has achieved breakthrough growth, ringing up RMB 2.5 billion in revenues in 2011, 25% more than the year before. In 2011, Yangzhou approved 1,378 projects, with total investment reaching RMB 254 million. The projects were mostly dedicated to the city’s emerging and pillar industries, including Zhongxian’s Solar Energy Project and Zhongke Semiconductor’s White LED Project.

(2) Social sustainability

The city’s social sustainability ranking has improved from 80th place in 2008 to 44th in 2011. The main reason was that Yangzhou improved the social security system.

Reforming the pension system: Yangzhou’s pension insurance coverage grew by 10% between 2008 and 2011. First, farmers whose lands were expropriated were incorporated into the social pension insurance network. A total of 60,677 people have joined the pension insurance, 47,941 of whom are former farmers. Second, Urban and Rural Residents Social Pension is launched to combine the New Rural Pension System and Urban Resident Pension Insurance, which are funded by both individuals and government subsidy. Third, the city has reformed the pension insurance system for municipal agencies and units. So the premium is calculated based on total wage instead of filed wage, and minimum premium is set as the average monthly wage of all non-public organizations for the previous year. Fourth, benefits of pension insurance have gradually improved in terms of increasing pension of corporate retirees.

Reforming the medical insurance system: The city established a balanced medical insurance system that strengthened coverage and improved benefits and quality. It also improved access for retirees and increased reimbursement rates for critical diseases. Maximum reimbursement for special materials and hospitalization expenses has also been raised, while the list of reimbursable drugs extended.

Promoting social insurance: Yangzhou introduced a series of social insurance projects, including one for maternity and another for work-related injuries, including for migrant worker. Corporate employee pension insurance, urban worker medical insurance and unemployment insurance have all seen their coverage expanded with premium payment increasing. Lastly, Yangzhou was the first city in China that implemented social insurance MIS. The system enables social insurance transfer, platform buildup, social insurance balancing and internal auditing to provide regulated, digitized and standardized insurance operation.

Improving human resources: Yangzhou launched an aggressive top management talent building program to meet development needs; this program reached almost 2,000 people in 2011. It also provided on-the-job training for corporate employees and matched new graduates with suitable jobs. On the education front, enrollment was almost universal from kindergarten through high school. Vocational schools recruited 24,500 students and the higher education enrollment rate was 46%.

(3) Environmental sustainability

On environment cleanliness, Yangzhou has improved its ranking from 34th place in 2008 to 21st in 2011. This success toward building an ecological city can be attributed to the following efforts:

The government made emissions reductions a target for all agencies, and tracked it monthly. It also brought several waste-water treatment plants online, while establishing a waste-water emission permit system and clean manufacturing assessment system. In terms of environmental regulation, Yangzhou initiated a series of projects on heavy metal, chemicals, and electroplating. In 2011, the city investigated 118 companies for violating environmental regulations and formalized a site investigation process. It also built new
capabilities, such as dust haze monitoring and remote sensing image interpretation and establishing an environmental project database. The city aggressively persuaded industrial parks to build greener; Weiyang Economic Zone is a showcase.

On built environment, Yangzhou improved from the 58th place in 2008 to the 51st place in 2011. Some example projects are the West Lake Underground Passage Project and Sanwan Park Project in 2011. It extended the Wenchang Road eastward, built Mangdao Bridge, constructed 328 Highway, rebuilt Yangling Road, expanded Jiangdu Road and re-engineered several major arteries to complete the city’s traffic network. On an aesthetic level, the green landscape program and vegetation planning along the ancient canal have created attractive natural oases. The Great Urban-Rural Development Action Plan provided planning for rural environment improvement and funding for eco-environmental projects, aiming to build low-carbon towns. Lastly, buildings are being monitored for energy saving, with higher standards for new construction.

Jieyang

City and sustainability overview

Jieyang is located on the Chaoshan plain in Guangdong province in southeastern China. Its terrain tilts toward the east with hills and mountains on the northwest and southwest and an expansive and fertile Rong River and coastal alluvial plain in the central, southern, and southeastern parts of the city. Thanks to Rong River, Jieyang has long been seen as a “land of abundance.”

Jieyang with a city district area of only 58 square kilometers and district population of 0.7 million, has been growing fast; its GDP increased by 50%, to RMB 20.9 billion, between 2008 and 2011. Jieyang’s USI ranking rose from 129th place to 86th.

Key experiences and features

Jieyang as a small-sized economy compared to others at the same level, is growing faster, due to actions it took to promote sustainability, including the effective use of resources and policies on environmental protection. Here we focus on understanding what Jieyang is doing, and how its progress can offer lessons to other small-sized cities.

(1) Social sustainability

From 2008 to 2011, Jieyang made remarkable progress, going from 92nd to 16th in social ranking. The most important reason is that Jieyang delivered improvements in five key medical-and-health areas.

Upgrade basic medical insurance system: Jieyang established an integrated management and service system to provide medical insurance for the entire population—employees, urban residents, and rural ones, through a rural cooperative. The number of urban residents enrolled in the basic medical insurance system rose from 4.4 million in 2008 to 5.4 million in 2011, for a participation rate of 98.6%. Jieyang increased the reimbursement for hospital expenses to up to 70%, and also lifted the cumulative payment cap to RMB 80,000 per year.

Breakthrough in the National Basic Drug system: Jieyang did two important things. First, it built a basic drug insurance system. It established Huilai County as the basic drug insurance program test county. Until April 30, 2011, 65 rural health clinics and 18 community health centers have implemented the National Basic Drug system by canceling medicine markup and following zero-profit policy for essential drug sales.

Second, it improved drug supervision, access, and safety. Jieyang improved oversight of drug production and circulation; on-site checks of production and prescription processes
are in place for 56 essential drug categories, and there is electronic supervision of companies that produce essential drugs. It also constructed rural pharmacy networks, as well as pharmacies for medical institutions. Till now, rural villages are 98.7% covered by the drug supply network and 100% by the drug supervision network.

**Develop the grass-roots medical and health service system:** Jieyang has made building grass-roots medical institutions its top priority and continuously improved its service network. Since 2009, 13 grass-roots medical institutions have been included in the subsidy program of National Development and Reform Commission. Three new community-based health service centers were established, bringing the total number of such operations to 18, thus making the vision of one community-based health service center per community possible. There are seven county-based general, 59 qualified rural health clinics, 12 qualified community-based health service centers, and 1,182 qualified village-based health rooms.

Jieyang is also exploring an integrated management model for towns and villages in which county-based hospitals support rural health clinics. Huilai County pioneered the experiment, setting up 50 “administrative villages” with rural health clinics. As of the end of December 2011, Huilai County government had invested RMB2.67 million in this effort and completed construction of 50 health stations in pilot villages. As a result of this pilot, Huilai County has accumulated valuable experience as the city considers how to roll out this model.

**2) Resources sustainability**

In terms of resources, Jieyang ranked 50st in 2008 and 21th in 2011, reflecting its improved sustainability practices, particularly in land and water practices, forestry, and marine ecology.

**Protect land and water resources:** Jieyang has followed strictly the arable land protection policy. The city is developing a digital geospatial framework to improve surveying management and service levels. Meanwhile, Jieyang is accelerating the effort to improve counties’ capability of “mass prediction and mass prevention” of geological disasters. Water resources are managed in an integrated manner, and policies require protection for reservoirs and irrigation; pollution control in the Rong River, Lian River, and Long River basins has been improved. Pollution-emitting companies are required to comply with strict standards or are forced to shut down. Jieyang also forbids construction of sewage emission facilities or industrial wastewater discharge in protected areas where drinking water sources are.

**Improve forest and marine ecological construction:** Keen to build “a green city with green villages, green channels, and green shelters,” Jieyang aims to develop a broad and healthy ecosystem, including forests in mountain and coastal areas, and nature reserves. By 2015, Rongcheng area, Puning city, Huilai county will be built into ecological forest area.

In regard to marine ecology, Jieyang has carried out integrated resource management for near-shore areas, islands, and coastal zones. It enhanced marine resources and environment management and protection at the outlet of Rong River. Such ecological resources as shelter forest and mangroves are also prioritized for protection.

**3) Economic sustainability**

Jieyang’s economic ranking rose slightly, from 138th in 2008 to 136th in 2011, primarily by fostering industrial development.

Jieyang has lowered industrial investment cost to encourage such investments. The approval procedures for new construction for industrial companies have been streamlined and improved, and their land-use rights clarified. The city also provides targeted policy support to new projects that invest at least RMB100 million, high-technology companies, corporate headquarters, manufacturing bases, and R&D centers. Industrial projects that
complete investment of more than RMB500 million in productive fixed assets within two years will also be heavily rewarded. Priority industrial companies are entitled to “green card” treatment where they get premium public services, such as licensing, tax, inspection and assessment, public security, land training.

In terms of easing day-to-day operations, a city-level industrial coordination meeting between corporates and government managing departments is held at least twice a year to help resolve difficult issues. Accountability is implemented for business and investment recruiting to ensure consistent ownership from business recruiting, execution, and tracking.

Zunyi

City and sustainability overview

Zunyi is the second-largest city in Guizhou province in southwestern China. It is a key area in the state plan for the Yangtze River upper stream and famous for its tobacco and liquor (as well as being the place where Mao Zedong was elected leader of the Communist Party). The city center built area covers a total land of almost 65 square kilometers, and has been growing fast – GDP growth rate of 10% a year between 2008 and 2011. Total GDP and per capita GDP, however, are still relatively low (RMB 25.4 billion and RMB 22,500 respectively). It is a small-sized economy.

Zunyi’s performance in USI (159th to 149th) and all sub-indicators was steady but also revealed its weak foundation; there is considerable room for improvement. Basically, it improved its position in economic and resource terms, but stagnated in social terms. Its experience can provide lessons for cities in similar situations.

(1) Economic and resource sustainability

In 2011, Zunyi ranked 69th in economy, up from 91st in 2008.

Economics: As part of China’s broader efforts to develop the west, Zunyi accelerated its economic development transformation through a series of policies on industrialization, urbanization, agricultural modernization and restructuring. The provincial government approved the Zunyi City Master Plan and the Zunyi Land Use Master Plan. The land coordination policy for the downtown area injected vitality to the land market. Construction of the Xinpu new district, the new train station area and the Guojiu new district were in full swing, in parallel to these undertakings were the old town renovation and key small town construction which lifted urbanization rate to 34.5%.

Industrial project construction increased significantly. New achievements to support industries were made in projects of “six bases”, “six signature projects” and “six multi-billion RMB industries (companies)”. Moutai Distillery added completed significant technological upgrades, Goupitan Power Station began operation, and Tongzi Coal Chemical Engineering and Zunbao Titanium kicked off pilot operations. Tongzi Thermal Power Plant and a number of coal mining projects were rolled out. Xichi district’s oil and gas development was accelerated and the grid structure improved.

The city also boosted the development of service sectors. Tourism, for example, saw strong growth, bringing in RMB24 billion in revenues in 2011, and generated added value of RMB 47.7 billion, up 16.6% compared to 2008.


Zunyi has sought to make energy conservation a universal effort, to rein in consumption, and to improve related technical capabilities. It has increased R&D funding for energy conservation technology year after year, and supported companies to adopt energy-saving
materials and equipment and to evaluate its energy consumption. 16 model projects of energy conservation technology industrialization have been carried out.

To provide a sound factual basis for its policies, Zunyi conducts quarterly energy conservation trend analyses, and tracks the power consumption of energy-intensive industries; it makes sure that companies complete their energy-use reports, and evaluate SOEs and their subsidiaries on their energy conservation performance. Zunyi will also shut down operations with poor energy performance, and review fixed-assets investment projects; these assessments are a prerequisite for project approval. It collaborates with stakeholders to evaluate SOEs and their subsidiaries on energy conservation. Other conservation initiatives include encouraging environmentally-friendly buses and other forms of transport and improving lighting and air-conditioning systems.

(2) Social sustainability
Zunyi's social ranking improved slightly, from 158th in 2008 to 152nd by 2011. The major reason for this modest change was wider medical and social-security coverage; more than 150,000 people were lifted out of poverty.

Zunyi started relatively late in medical and health undertakings, making the first significant investments in 2010; financial support has continued since, and medical and health care experienced rapid growth. Specifically, 224 township clinics, six government community health service centers and village clinics implemented the National System for Essential Drugs. Moreover, traditional Chinese medicine hospitals; maternity and child health care centers; county-level hospitals; and village clinics and community health service centers all made progress; 65 new nursing homes were constructed. Food and drug regulation, disease control and prevention, health supervision, blood supply were all strengthened. In 2011, the basic medical insurance participation rate for urban residents and new rural cooperative medical service participation rate reached 86.9% and 95.4% respectively.

There was also substantive progress on the “Two Basic Efforts”— nine-year compulsory education and illiteracy elimination among young and middle-aged adults. Primary-, middle- and high school enrollment all rose, and nine provincial level model high schools were built. Higher education, vocational training, special education, and preschool education continued to prosper, as Zunyi increased its spending on education by more than 17% a year.

During the 11th five years, Zunyi's efforts were recognized when it was nominated for building a “National Model City” by The Central Commission for Guiding Cultural and Ethical Progress of the Communist Party of China.

(3) Environmental sustainability
In terms of building a clean environment, Zunyi’s ranking improved slightly, from 164th in 2008 to 150th in 2011. The city focused on the following areas:

Control construction pollution: Zunyi enforced strict construction protocols, including mandatory energy conservation standards for new buildings. Existing buildings were subject to energy conservation by using new wall materials, fly ash bricks, industrial waste residue bricks and hollow bricks to prevent dust and other from causing environmental pollution.

Agriculture and rural area clean-ups: Some 5,500 rural households built methane tanks to replace coal. The city also made great efforts to promote the adoption of energy saving and environmentally friendly agricultural machinery and new technology. Garbage disposal was improved and waste water treatment and desulfurization facilities were built.

Land quality: Zunyi added 623 square kilometers of new forest area in 2011 alone; its forest coverage reached 48.6%. There were efforts to deal with desertification and soil erosion, and environmental improvement in these areas was very obvious.