

## **SECTOR ASSESSMENT (SUMMARY): MULTISECTOR (EDUCATION, ROAD TRANSPORT, WATER SUPPLY AND SANITATION)**

### **Sector Road Map**

#### **1. Sector Performance, Problems, and Opportunities**

1. **National urban challenges.** The People's Republic of China (PRC) has become rapidly urbanized. During 1992–2012, the urban population grew from 322 million to 712 million, representing a rise from 27% to 53% of the total population.<sup>1</sup> The average annual growth rate of the urban population over the same period was 4.1%, which is considered very high by international standards.<sup>2</sup> Two-thirds of this urban population growth came from rural–urban migration, and the majority of these people reside in growing and emerging small- and medium-sized cities.<sup>3</sup> The urbanization trend is projected to continue, even when the total PRC population reaches its peak of 1.46 billion in 2030, when the urban population will reach over 1 billion, or 69.0% of the total population. A widening urban–rural development gap becomes a critical issue. Although this is a common trend for all countries during their early industrialization stage, the impact is more severe in the PRC because of its past regional development trend and the *hukou* system.<sup>4</sup> Until the 1980s, many provinces and autonomous regions in western PRC served as national mineral-based resource centers due to their rich mining resources. A number of mining industries, resource-intensive heavy industries, and military industries were deployed in this region. In the 1990s, the national opening-up policy and coordinated development strategy focused on the eastern region, which led to a large inflow of foreign capital into coastal cities. Meanwhile, reduced production and depletion of mineral resources further slowed socioeconomic development in western PRC. In 1999, the Government of the PRC launched the National Strategy for Development of the West to address the regional development imbalance through preferential policies and financial support to the western inland region.<sup>5</sup> Although the western inland provinces enjoyed higher annual gross domestic product (GDP) growth rates compared to the eastern coastal region in 2000–2012, their average GDP per capita in 2012 was still only 75% of the national GDP average and only 58% of that of the eastern coastal region. Rebalancing regional development, increasing migrant workers, and widening urban–rural income disparities remain national development challenges.

2. **Challenges and opportunities for Gansu and Baiyin.** Gansu province is one of the poor provinces targeted under the National Strategy for Development of the West.<sup>6</sup> Its per capita GDP in 2013 was CNY24,438, the second lowest in the PRC after Guizhou province. Gansu also suffers from high poverty incidence: 8.4% for urban households and 68.6% for rural households, much higher than the national averages of 2.8% for urban households and 13.1%

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<sup>1</sup> National Bureau of Statistics. 2013. *China Statistical Yearbook 2013*. Beijing: Government of the PRC.

<sup>2</sup> For example, the annual urban population growth rates were approximately 0.4% for Japan (2000–2010) and 2.7% for the Philippines (2000–2007). In the PRC, the annual average total population growth rate was 0.7% during 1992–2012.

<sup>3</sup> In 2011, there were 253 million migrant workers according to the National Bureau of Statistics (footnote 1).

<sup>4</sup> A *hukou* is a record in the registration system of urban and non-urban households required by the PRC law. Most migrant workers (non-urban registration) do not have access to the same affordable housing, education, health, and social insurance services in cities as people with urban registration.

<sup>5</sup> The strategy aims to support faster economic development of the western regions to allow them to catch up with rapid advances in the country's eastern provinces. It covers six provinces including Gansu, five autonomous regions, and one municipality of provincial status directly administered by the central government.

<sup>6</sup> The average annual per capita disposable incomes of urban households in Gansu was CNY18,965 and of rural households CNY5,108, substantially lower than the national averages of CNY26,955 for urban households and CNY8,896 for rural households.

for rural households. Gansu's mineral resources production has been gradually declining, and its economic transition from primary and secondary industries to more value-added manufacturing and service-based tertiary industries has been slow. Baiyin, a medium-sized city close to the provincial capital of Lanzhou, is a typical case. In the 1950s, the city was originally established as a national copper mining base, and its development was fueled by strong growth of mining and metallurgical industries. However, since 1985, its socioeconomic development has suffered major setbacks after continuous copper exploitation and depletion, and associated environmental degradation. In 2008, Baiyin was officially listed as one of the first resource-exhausted cities in transition, and became a recipient of special funding support from the Government of the PRC. Although Baiyin's industrial output grew by 13.5% annually in 2008–2013, its transformation from a resource-exhausted city to inclusive and green city has been slow. The industrial composition remained unchanged during 2008–2012.<sup>7</sup> Shares of different industries in total output have not changed during 1985–2012, except for a decline in the nonferrous metal industry output (from 60% to 44%) and increases in the coal-based energy industry output (from 8% to 27%) and chemical industry output (from 2% to 14%). Urban unemployment rates in 2012 were high at about 20%.<sup>8</sup> For Baiyin to be a demonstration of a successful transformation model for other resource-exhausted cities, the city needs to (i) build a resilient foundation for economic development through industrial transformation, (ii) reverse the trend of layoffs and stop talent outflow, (iii) demonstrate its commitment to green industrial city development, and (iv) raise the city's livability to attract people from surrounding areas to support its industrial transformation.

3. Successful industrial transformation of Baiyin, and inclusive and environmentally sustainable city development, is an opportunity for Gansu's overall socioeconomic development. In 2011, Gansu launched the Lanzhou–Baiyin (Lanbai) economic zone to boost its regional economic development by integrating cities and industrial bases. In 2012, the zone included 21% of the provincial population and produced 35% of provincial GDP. Given the advantages of abundant and stable water resources and vast areas of nonarable land, Baiyin aims to accelerate its transformation from a resource-exhausted mining city into a new industrial center. The strategy is underpinned by development and upgrading of industrial parks. The Liuchuan Industrial Park (LIP) is one of three priority industrial parks in Baiyin.<sup>9</sup> The LIP has strong potential for rare-earth material processing industries, combining with its local advantage of nonferrous metal processing and equipment manufacturing industries. Through its development, the concepts of resource efficiency and green industrial parks will be demonstrated. The industrial transformation will also be supported by development of appropriate technical and vocational training systems. Such systems can capture a large number of unskilled surplus laborers, laid-off workers, and local farmers who otherwise may migrate to the eastern coastal region. A livable city environment by safe and convenient city environment will attract more people to settle in Baiyin. Key to Baiyin's industrial transformation are development of the LIP by financing water, sanitation, and road infrastructure; strengthening local technical and vocational education and training (TVET); and upgrading road safety and improving public transportation.

4. **Technical and vocational education and training.** In the PRC, it is estimated that the total enrollment of tertiary TVET institutions reached 9 million in 2010, accounting for one-third

<sup>7</sup> Baiyin's industrial composition during 2008–2012: primary 11%–13%; secondary 55%–57%; tertiary 31%–33%.

<sup>8</sup> The official statistics indicate that the registered urban unemployment rate was 2.8% in 2012. The figures are estimated based on the local statistics and interviews with government officials from the Baiyin municipal government by counting unregistered unemployed job seekers in Baiyin.

<sup>9</sup> Asian Development Bank financially supported the remaining two industrial parks in 2009–2013 to start Baiyin's industrial transformation (ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Gansu Baiyin Urban Development Project*. Manila).

of the total enrollment of all tertiary educational institutions. The country's national long-term strategy aims for 28% of the total labor force to be highly skilled by 2020. In Gansu, secondary and tertiary TVET education were strengthened during 2000–2012 through establishment of 326 secondary TVET schools and 22 tertiary TVET colleges. The number of secondary school students increased by 1.7 times from 2006 to 347,325 in 2010. At the tertiary level, 871 major courses with 5,768 qualified teachers were offered in 2012. In Baiyin, conditions are challenging. The city suffers from a prolonged economic recession and faces delay in industrial transformation because of lack of skilled and nonskilled workers. Although Baiyin had 87 TVET schools and training agencies in 2013,<sup>10</sup> its bottlenecks are (i) insufficient TVET service provision for skills and knowledge required by emerging industries, (ii) limited partnerships between industries and TVET providers, (iii) weak institutional capacities of TVET providers to respond to new skill demands arising from local socioeconomic development, (iv) low quality of teaching and unavailability of qualified teachers, and (v) ineffective labor market information system to match appropriate skilled and nonskilled workers to existing and emerging industries.

**5. Road and traffic management.** In 2012, 109.3 million vehicles were registered nationwide, with a steady increase of 17.8% per annum during 2001–2012. Twenty-three cities have more than 1 million registered vehicles and the urban road length had extended to 0.33 million kilometers (km) in 2012. This resulted in a sharp rise in traffic accidents during the late 1990s and early 2000s, but the number has reduced because of improvements in road safety management since 2003. Gansu faces a faster increase in vehicle registration. In 2012, 1.3 million vehicles were registered, with an annual growth rate of 27.1% during 2001–2012. Many small- and medium-sized cities with weak urban road and traffic management provisions face increasing traffic violations and road accidents. Baiyin's vehicle ownership in urban districts was 68,000 in 2012. However, traffic congestion gradually became evident and the number of road traffic accidents increased by 1.7% from 1,211 in 2010 to 1,232 in 2013.<sup>11</sup> Violations of traffic rules and road accidents have increased dramatically.<sup>12</sup> An effort to promote public transport resulted in the operation of 36,000 km of bus lines per year with daily passenger volumes of 130,000 person-trips. However, the punctuality rate of bus services was 60% and the modal share of public bus service was 37% in 2012. Baiyin city center must improve its deteriorating livability with regard to traffic safety management and public transportation services.

**6. Water supply and sanitation.** The PRC is experiencing rapid development of urban water supply and sanitation systems. In 2012, the total urban water supply was 52.3 billion cubic meters (m<sup>3</sup>) with treatment capacity of 271.8 million m<sup>3</sup>/day; 0.6 million km of distribution pipelines provided tap water to 410 million residents. For sanitation, the daily treatment capacity of urban wastewater increased to 136.9 million m<sup>3</sup>/day with total pipeline length of 0.4 million km. In Gansu, the provision of water supply and sanitation infrastructure is still significantly limited. Only 20% of residents have access to water supply service, and wastewater treatment capacity of 0.16 m<sup>3</sup>/person/day is lower than the national average of 0.19 m<sup>3</sup>/person/day. Baiyin's water supply capacity of 0.5 million m<sup>3</sup>/day can provide 39% of its residents with access to water service. For sanitation, four wastewater treatment plants in Baiyin cover 59% of the total wastewater volume of the municipality. However, these capacities are far below the requirement to support existing heavy industrial activities and transformation. Baiyin's weakness is its mixed provision of water supply and sanitation services for domestic and industrial users, as all industrial parks in Baiyin share water supply and sanitation facilities with domestic users.

<sup>10</sup> One tertiary TVET college, 14 secondary TVET schools, and 72 public and private training agencies.

<sup>11</sup> Accidents that cause injuries and property loss increased by 94.3% from 35 to 68.

<sup>12</sup> During 2010–2013, the number of traffic violations increased by six times (12,025 cases to 76,519 cases) and the number of major accidents almost doubled (35 cases to 68 cases).

## 2. Government's Sector Strategy

7. The main theme of the PRC's Twelfth Five-Year Plan, 2011–2015 is to build a harmonious and moderately prosperous society, with more balanced economic development that considers environmental sustainability and social inclusiveness. Since taking over in 2013, the new central government has further emphasized urbanization as an important driver to stimulate the PRC's domestic consumption and sustain its socioeconomic development. The New Urbanization Plan was released in March 2014 as the basis for the PRC's development direction. The Government of the PRC aims for socially inclusive urbanization while safeguarding the environment. Several key sector-specific strategies support the PRC's urbanization and industrialization. During 2011–2015, the government's Twelfth Five-Year Plan was translated into numerical targets of constructing water supply plants with total capacity of 55 million m<sup>3</sup>/day and 0.19 million km of pipeline to achieve 100% coverage of urban public water supply by 2020.<sup>13</sup> For sanitation, urban wastewater treatment capacity will be expanded by 45.7 million m<sup>3</sup>/day with 0.16 million km of pipeline network. According to the Twelfth Five-Year Plan for Road Transport, the government will invest more than CNY150 billion to support (i) development of an urban intelligent transport system (ITS), (ii) development of highway and urban public transport information, and (iii) cooperation of ITSs and new information technologies. With the need for skilled workers to meet industrialization policy goals, TVET development was also emphasized as one of the top 10 priority areas under the Twelfth Five-Year Plan and was specified in the National Long-Term Strategy on Education (2010–2020).

8. The Baiyin municipal government's sector strategies are in its Twelfth Five-year Plan for Urban Construction, Road and Waterway Construction, Industry and Information Development in 2010. The plan fully aligns with the overarching national and provincial sector plans and policies, especially the National Strategy for Development of the West, the Lanbai Economic Zone Development Plan, and the Resource-Exhausted City Transformation Policy. Baiyin's urban development objective is to diversify its industrial value chain comprising nonferrous metal, rare-earth manufacturing, building materials, chemical, energy, and power industries. Basic infrastructure development must facilitate integrated urbanization and industrialization. The plan also emphasized the importance of improving the quality of life of local people, and enhancing the education, employment, and social security support provided to them.

## 3. ADB Sector Experience and Assistance Program

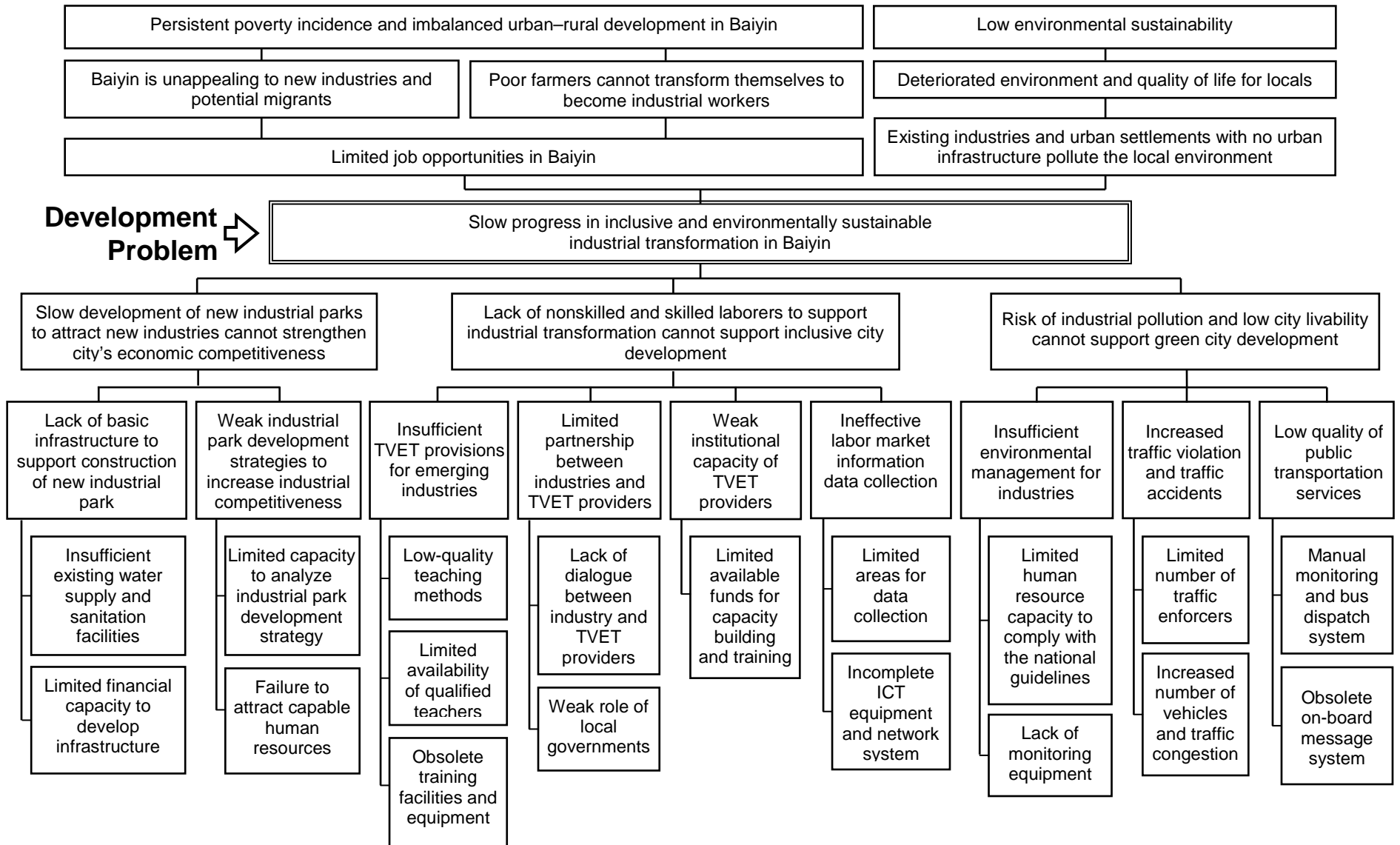
9. As of November 2014, the Asian Development Bank (ADB) had approved 56 loans totaling \$6.5 billion for projects in the urban and education sectors in the PRC. In line with shifting PRC development challenges, ADB support has focused on balanced socioeconomic development and environmental improvement with a growing focus on inclusive growth and integrated urban and rural development. Project preparation has incorporated lessons from other urban sector projects in Gansu and the PRC, including the need for (i) setting clear objectives and performance indicators, (ii) comprehensive due diligence on land acquisition and resettlement, (iii) detailed analysis on technical feasibility and appropriate contract packaging, (iv) strong project management and procurement support at project start-up, and (v) capacity building on ADB guidelines and procedures for contract management.<sup>14</sup>

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<sup>13</sup> Ministry of Housing and Urban and Rural Development. 2012. *National Urban Water Supply Facilities Improvement and Construction: Twelfth Five-Year Plan and Long-Term Goal in 2020*. Beijing: Government of the People's Republic of China.

<sup>14</sup> As of May 2014, 16 project completion reports were available for the urban sector, of which four were multisector projects and 12 for water supply and other municipal infrastructure and services.

## Problem Tree for Multisector



ICT = information and communication technology, TVET = technical and vocational education and training.  
 Source: Asian Development Bank.

### Sector Results Framework (Urban Development 2011–2015)

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Country Sector Outcome		Country Sector Outputs		ADB Sector Operations	
Outcomes with ADB Contributions	Indicators with Targets and Baselines	Outputs with ADB Contributions	Indicators with Incremental Targets	Planned and Ongoing ADB Interventions	Main Outputs Expected from ADB Contributions
<p>Competitive, green, and inclusive urbanization</p>	<p>Water supply and other municipal infrastructure and services:</p> <ul style="list-style-type: none"> <li>Urban population with access to piped water supply increased from 96% (2009) to 98% (2015)</li> <li>Urban population with access to improved sanitation increased from 58% (2008) to 65% (2015)</li> <li>Domestic solid-waste treatment ratio increased from 71% (2010) to 80% (2015)</li> </ul> <p>Education:</p> <ul style="list-style-type: none"> <li>Number of students at secondary vocational schools increased from 21.79 million (2009) to 22.50 million (2015) (sex disaggregated)</li> <li>Number of students at postsecondary vocational schools increased from 12.8 million (2009) to 13.9 million (2015) (sex disaggregated)</li> </ul>	<p>Services expanded and improved</p>          <p>Infrastructure and services expanded, improved, and well managed</p>	<p>Treated water supply increased from 160 million m<sup>3</sup>/day (2010) to 200 million m<sup>3</sup>/day (2015)</p> <p>Wastewater treatment increased from 150 million m<sup>3</sup>/day (2010) to 180 million m<sup>3</sup>/day (2015)</p>      <p>Number of students enrolled at secondary vocational schools increased by 710,000 by 2015 (Baseline: 21.79 million in 2009)</p> <p>Number of students enrolled at postsecondary vocational schools increased by 1.1 million by 2015 (Baseline: 12.8 million in 2009)</p> <p>Municipal and town governments' institutional and financing capacity improved</p>	<p>Planned key activity areas: Lending operations with a total investment of \$1.9 billion in water supply, wastewater, solid-waste management, heating, gas, urban transport, and river rehabilitation Nonlending programs in finance, environmental management, vocational education, and urban planning; knowledge products based on technical assistance findings and policy notes</p>  <p>Planned projects (2012–2015) (\$1.9 billion):</p> <ul style="list-style-type: none"> <li>Water supply and sanitation (\$378 million)</li> <li>Urban transport (\$593 million)</li> <li>Education (\$108 million)</li> <li>Other municipal infrastructure and services (\$821 million)</li> </ul> <p>Ongoing projects (\$2.29 billion):</p> <ul style="list-style-type: none"> <li>Water supply and sanitation (\$895 million)</li> <li>Urban transport (\$848 million)</li> <li>Education (\$2 million)</li> <li>Other municipal infrastructure and services (\$542 million)</li> </ul>	<p>Planned projects (2012–2015):</p> <ul style="list-style-type: none"> <li>Additional water and wastewater capacity (1.39 million m<sup>3</sup>/day)</li> <li>Additional urban roads built or upgraded (685 km)</li> <li>Additional vocational students enrolled (30,000)</li> </ul> <p>Ongoing projects:</p> <ul style="list-style-type: none"> <li>Additional water and wastewater capacity (2.65 million m<sup>3</sup>/day)</li> <li>Additional urban roads built or upgraded (927 km)</li> <li>Additional vocational students enrolled (5,000)</li> </ul>

ADB = Asian Development Bank, km = kilometer, m<sup>3</sup> = cubic meter.

Source: Asian Development Bank.