SECTOR ASSESSMENT (SUMMARY): MULTISECTOR (WATER SUPPLY AND SANITATION; IRRIGATION, DRAINAGE, AND FLOOD PROTECTION; ROAD TRANSPORT)

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Chongqing, one of four centrally administered municipalities located in the middle reaches of the Yangtze river, is part of the less-developed western inland region of the People’s Republic of China (PRC). The municipality, with a total population of 33.3 million in 2011, comprises 38 districts and counties with 839 small- and medium-sized towns and townships. The government expects to transform Chongqing into an important western-region growth hub and a major transportation and economic center under its national policies including the National Strategy for Development of the West.1 Chongqing’s per capita gross domestic product (GDP) increased 2.5 times from 2006 to 2011, reaching CNY34,500 ($5,308); the urbanization rate increased by 8% per annum; and urban annual income increased by 11.3% and rural income by 13.1%.2 Despite its recent macroeconomic successes, Chongqing faces large socioeconomic challenges. Rapidly developing western central districts and counties coexist with poverty-stricken counties in the east, widening income disparity and investment gaps within Chongqing.3 The proportion of GDP in the western central districts and counties collectively amounts to 77.5%, while those in the northeastern and southeastern parts are 17.1% and 5.4%, respectively. Even within the western central part of Chongqing, imbalanced development is evident where urban and rural areas are physically and economically disconnected. In 2012, 1,738 villages were designated as “poverty villages,” with about 2.0 million people living below the municipal poverty line of an annual per capita income of CNY2,300 ($353.8).

2. Challenges and opportunities. With strong support from the PRC government, Chongqing became the first provincial demonstration area for piloting urban and rural reforms since 2008. Chongqing addresses inequalities by investing in public infrastructure and services alongside social reforms. During 2008–2011, it invested CNY48.1 billion to improve the provision of water and sanitation, gas supply, and land development. By 2010, national and provincial highway networks connected most of the districts and counties. By 2011, 5,864 villages had access to tap water, benefiting 303,000 rural residents.4 For sanitation, 1,549 kilometers (km) of sewerage pipeline were added, 74.6 million cubic meters (m³) of domestic wastewater were treated, and the length of flood embankment reached 387 km. Despite Chongqing’s continuous efforts, progress in narrowing the urban–rural development gap has been very slow. The proportion of the western central, northeastern, and southeastern regions contributing to the overall GDP of Chongqing changed very little during the past 5 years. The urban–rural income disparity rate gradually decreased to 3.3 in 2011, but remains higher than the national average of 3.2.5 The limited quantity and quality of basic infrastructure in many parts of Chongqing means that the region cannot effectively support local socioeconomic development needs and attract investors and visitors to smaller towns and villages that could

3 In 2011, 66% of districts and counties had lower per capita GDP than the national average of $5,432; the difference of per capita GDP between the wealthiest district and the poorest county increased by 9.1 times.
have considerable potential. Chongqing’s development challenge is to scale up the effectiveness of its public investment to rebalance harmonious urban–rural development. To accelerate more balanced development, Chongqing must selectively support different levels of cities, towns, and villages to enhance physical connectivity and economic competitiveness. Public investment, therefore, should strategically aim to (i) develop another regional center along the Yangtze river economic corridor, (ii) support the development of second- and third-tier towns as a base for local economic activities, and (iii) connect isolated townships and villages to open up better social and economic development opportunities. Among various urban sectors, identified priority sectors are water supply, flood protection, and urban–rural road connection as they provide a direct contribution to foster urban–rural integration in Chongqing.

3. **Water supply.** Growth of the PRC urban water supply system has been rapid. In 2011, the total urban water supply was 71.4 billion m$^3$ with treatment capacity of 387 million m$^3$/day; the total distribution pipeline of 1.0 million km provided tap water for 630 million people. During the Twelfth Five-Year Plan period, the government plans to construct new water plants with total capacity of 55 million m$^3$/day with 185,300 km of pipeline to lay the foundation to achieve 100% coverage of urban public water supply by 2020. In Chongqing, during 2007–2011, water supply capacity was increased by 636,400 m$^3$/day and 2,925 km of pipelines were added. The number of urban residents with access to tap water increased by 48%, from 8.7 million to 12.8 million, although about 72% of the increased access is in relatively wealthy western central districts and not in the northeastern and southeastern counties. While provision of rural water supply must be expanded to smaller towns and isolated villages to ensure improved quality of life for the poor rural population, upgrading of the water supply system is also urgently needed in urban areas. In many growing urban centers, many small plants and obsolete facilities increase the inefficiency of the water supply system and the risk of unsafe drinking water. Large cities and towns in Chongqing are constrained by poor capacity to manage drinking water.

4. **Flood management.** Flooding is one of the most frequent and serious natural disasters hindering urban development, especially in the mountainous western region of the PRC. Nationwide comprehensive analysis highlights that about 21.1 million people have been economically and physically affected by flood disasters, resulting in about CNY374.5 billion of direct losses in 2009. The degree of adverse impact is increasing annually. The terrain of the river catchment in Chongqing includes mainly mountains and valleys, and many small rivers and tributaries scattered in poor and remote mountainous areas. A 2010 survey showed that Chongqing had CNY6.1 billion of economic losses due to flood disasters. The flood-protected area has been gradually increasing but investment priorities are given to areas along the Yangtze river in the western central districts, while riverbanks of cities and towns on the smaller tributaries remain without flood protection. Frequent flood events are a clear constraint for these cities and towns to become local centers for economic activities. Moreover, many experience very weak integration of nonstructural flood risk management including flood monitoring and early warning systems, and evacuation plans. Lack of experience hinders these poor districts and counties in properly addressing new risks such as future climate change impacts.

5. **Roads.** In the PRC, county rural roads account for 75% of the total road system and are considered fundamental infrastructure for reducing rural poverty. In 2010, 92.5% of townships and 77.6% of villages were connected to paved roads in the country. From 2006 to 2011, roads

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in Chongqing reached 118,562 km (an increase of 18.2%), of which 7,158 km were in urban areas. National and provincial roads in Chongqing were improved to connect 80% of its towns and townships. However, county and village roads pose significant technical and financial challenges for construction, and operation and maintenance. This results in poor road conditions and very restricted access for physically and economically isolated areas, prohibiting rural poor from accessing basic social services and better job opportunities. Road safety for new and existing roads needs to be improved by integrating its considerations into design, operation, and maintenance.8 Chongqing must prioritize its investment for county road construction to focus more on improving quality of life for the poor and local economic development opportunities, such as supporting local industries, logistics activities, and tourism development in areas with scenic significance.

2. Government’s Sector Strategy

6. The main theme of the PRC’s Twelfth Five-Year Plan, 2011–2015 is to build a harmonious and moderately prosperous society. Along with sustained economic growth, important principles include coordinated urban–rural development to gradually narrow the gap between urban and rural economies. The emphasis is on improving people’s livelihoods with the goal of increasing urban and rural disposable incomes by 7%. The plan sets a clear objective to address these inequalities through targeted investments in urban and rural public services, closely coupled with adjustment of economic structure and social development reforms. The State Council emphasizes the national importance of Chongqing’s urban–rural policies: to accelerate urban–rural reforms and development, to help promote the national western development strategy, to demonstrate an urban–rural reform model to other areas of the PRC, and to achieve inclusive and environmentally sustainable development.

7. As the first demonstration area to pilot urban and rural reforms, Chongqing makes continuous efforts to ensure balanced and inclusive growth by reversing the trend of widening urban and rural development disparities. In line with the plan, many sector-specific strategies and targets are established with definite development goals including narrowing the urban–rural income gap to 2.5:1.9 The objectives of these policies and plans are to (i) balance regional development; (ii) build an economic corridor in the southeastern ethnic minority areas to improve living conditions, and develop natural resources and tourism; and (iii) enhance urbanization and key infrastructure development. For specific sector strategy, Chongqing committed to continue investing in water resource conservation, the provision of urban and rural water supply, and local capacity development for water security and safety. Chongqing also developed objectives for comprehensive flood risk management by protecting 1,700 km of riverbanks for key catchments, constructing 500 km of new dikes, and promoting a flood management and emergency response system in accordance with the national policy on water conservancy development. For the transport sector, Chongqing targets road network development and improved road maintenance and management. The general objectives are to increase the total road length to 122,000 km and network density to 148 km/100 km², including constructing and upgrading 30,000 km of paved rural roads, achieving 85% village accessibility, and improving road safety and operation and maintenance capacity.10

9 These include Chongqing’s Twelfth National Economic and Social Development Five-Year Plan, Chongqing Urban and Rural Master Plan (2007–2020), and the Twelfth West Development Five-Year Plan.
3. ADB Sector Experience and Assistance Program

8. As of February 2013, ADB had provided 39 loans totaling $4.5 billion to the PRC for urban sector projects. In line with shifting PRC development challenges, ADB support has focused on balanced socioeconomic development, environmental improvement, and promotion of regional cooperation with a growing focus on inclusive growth and integrated urban and rural development. General lessons from the completed urban development projects include the need to (i) ensure a strong commitment from the government for effective project management and timely appropriation of counterpart funds; (ii) focus attention on implementation and supervision of resettlement; (iii) enhance capacity to ensure road safety together with road construction; and (iv) consider the engagement of experienced private agencies to help implement projects, including tendering agencies to strengthen the procurement processes. All lessons are incorporated in the project design.

9. Selection of project components. The project will be ADB’s second urban sector loan assistance to Chongqing. Past transport sector projects supported the western central districts of Chongqing to develop into a fast-growing regional transportation hub and a commercial and industrial center in the western PRC. The project is a part of timely and strategic shift of ADB’s support from transportation to the urban sector, narrowing increasing development gaps between urban and rural economies. Selection of the project components, therefore, was based on the initial urban project experience: (i) support for key cities and sectors directly contributing to county and municipal urban–rural integration, (ii) new and strong demonstration impacts, (iii) geographic distribution, and (iv) project management and financial capacity of district and county governments. For the first criteria, targets were set for support for key regional centers, for second- and third-tier cities and towns, and remote rural villages. Among urban sector, water supply, flood risk management, and intra-village and -town road networks were given priority (para. 2). Since the initial urban project targeted a rural small-scale water supply, this project will focus on a large-scale urban water supply system. The financial support for intra-village and town road networks will be continued from the previous project due to the importance of constructing direct physical linkages between urban and rural areas. For the second criteria, the potential for replication was given the highest priority for demonstration impacts. The selected project components enable to demonstrate (i) a water safety plan to respond to drinking water safety concerns in Chongqing and the PRC; (ii) climate proofing and ecologically friendly river enhancement for large, medium-sized, and small rivers; and (iii) urban–rural road safety. For the third criteria, the project areas selected are mostly located in poor northeastern and southeastern regions, providing coverage for 10 of the 17 districts and counties in these regions together with the earlier project. For the last criteria, all selected project districts and counties have previous ADB or the World Bank project experience. As a result of applying the criteria, the 7 proposed subprojects in 7 districts and counties were selected from an initial proposal of 80 subprojects in 32 districts and counties of Chongqing. The project will directly benefit 25 townships and 173 villages, and indirectly benefit all districts and counties in Chongqing by demonstrating effective financial support to attain balanced urban–rural development.

11 As of August 2013, 16 project completion reports are available for the urban sector, of which 4 are under multisector, and 12 are under the water supply and other municipal infrastructure and services.

12 The Chongqing Urban-Rural Infrastructure Development Demonstration Project (2010) is financing key infrastructure for (i) improving small-scale water supply systems of 72,500 m³/day in smaller county towns, and (ii) constructing and upgrading 362 km of rural roads in eight poor districts and counties.
Problem Tree for Multisector

Widened economic development gap between urban and rural areas in Chongqing

- Slow development of local industry and economy in poor eastern region
- Little development benefits shared with remote villages
- Second- and third-tier cities and towns cannot serve as local centers for economic activities
- Lack of regional urban centers in the northwestern part of Chongqing

Outdated water supply system, increasing flood risk, and limited access to all-weather roads in project districts and counties in Chongqing

- Lack of all-weather connection constraints local economic development and access of remote villages to the nearest towns in Fuling District, Chengkou County, and Shizhu County
- Increased flood risk in second- and third-tier towns restricts the investment opportunities in Wulong County, Youyang County, and Rongchang County
- Inefficient water supply system hinders development potentials of Wanzhou district

- Poor condition of roads
  - Lack of systematic road O&M plan and activities
  - Poor O&M and lack of road maintenance equipment
  - Weak capacity for systematic road O&M planning
- Lack of road network coverage
- Weak road management capacity
- Geographical restriction to build road in the area
- Rapid increase of traffic volume due to urban-rural development
- Inadequate road planning and management capacity
- Inadequate regulation to catch up with rapid urban-rural development
- Inadequate flood protection standards
- Increased frequency of flood incidents
- Reduced water retention capacity in catchment areas due to urban development
- Change in climate and rainfall patterns due to climate change
- Inadequate flood risk management capacity
- Weak flood risk management capacity
- Rapid urban expansion and population growth due to increasing urban-rural migration
- Poor maintenance of existing dikes
- Weak planning capacity for flood protection and control
- Lack of coordination among different plans to provide an inclusive flood protection
- Lack of resources for capacity building

- Inadequate water distribution system
  - Poor maintenance of the existing water supply pipeline
  - Lack of centralized water treatment facilities
  - Lack of resources for capacity building
- Poor O&M of resource and water supply facilities
- Poor O&M of the existing water supply pipeline
- Lack of experience in managing large scale, centralized water supply system
- Lack of resources for capacity building
- Poor O&M of resource and water supply facilities
- Lack of experience in managing large scale, centralized water supply system

O&M = operation and maintenance.
Source: Asian Development Bank
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<th>Country Sector Outcome</th>
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<td>Competitive, green, and inclusive urbanization</td>
<td>Water supply and other municipal infrastructure and services:</td>
<td>Services expanded and improved</td>
<td>Treated water supply increased from 160 million m³/day (2010) to 200 million m³/day (2015)</td>
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<td>Urban population with access to piped water supply increased from 96% (2009) to 98% (2015)</td>
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<td>Urban population with access to improved sanitation increased from 58% (2008) to 65% (2015)</td>
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<td>Domestic solid waste treatment ratio increased from 71% (2010) to 80% (2015)</td>
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<td>Education:</td>
<td>Number of students at secondary vocational schools increased from 21.79 million (2009) to 22.5 million (2015) (sex disaggregated)</td>
<td>Infrastructure and services expanded, improved, and well-managed</td>
<td>Number of students enrolled at secondary vocational schools increased by 710,000 by 2015 (Baseline: 21.79 million in 2009)</td>
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<td>Municipal and town governments’ institutional and financing capacity improved</td>
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ADB = Asian Development Bank, km = kilometer, m³/day = cubic meters per day.