Global cities actively envision their future and work toward realizing it through comprehensive and strategic planning. For example, New York’s One NYC Plan is organized around principles of growth, equity, sustainability, and resilience. Singapore’s land use plan for 2030 considers the country’s land use demands comprehensively so that potential trade-offs between uses can be evaluated holistically for continued economic growth and the provision of high-quality living environments (Urban Redevelopment Authority 2012).17

To overcome the challenges and constraints outlined above, Chongqing needs to adopt a long-term strategy that systematically manages and mitigates key risks and creates a pathway toward achieving its vision of becoming a global city by 2035. While this report does not propose detailed, sector-level, or industry-level policies, it identifies five strategic pillars (shown in orange in Figure 9) aimed at creating a set of enabling conditions, in particular concerning the spatial dimension, for Chongqing to move forward.

This Overview, which gives the highlights for each of the five pillars, is supported by a series of policy briefings and a technical report. Each can be read independently. Complementing this Overview, these documents provide a more technical analysis to identify the ways in which Chongqing can achieve its global city ambition.

- The Supporting Reports briefings address spatial strategy, connectivity, innovation, and green and low-carbon growth. These policy notes are intended to serve as a basis for further analytical work. Social inclusiveness, though discussed in this Overview, will require a separate study before a report can be provided.

- The technical report on urban growth scenarios models the outcomes and land use scenarios of two different development paths: a Trend scenario, which continues past patterns of land development, characterized by continued centralization of high-level employment around the existing downtown core, and expansive superblock, office park, and industrial development throughout central Chongqing; and a Compact Growth scenario, which posits a polycentric regional structure created through focused, walkable, mixed-use development around existing and planned transit nodes.
Strategic pillar 1

A spatial strategy that increases efficiency and quality of life by promoting a compact and human-centered development

Cities can increase their efficiency and quality of life through compact urban development. Preserving and achieving economic density increases agglomeration economies and brings people closer to jobs, while reducing infrastructure costs and environmental impacts. Cities can also increase their quality of life and global appeal by building mixed-use neighborhoods with unique urban fabrics, high-quality public space, and dense patterns of streets.

As noted in the discussion of benchmarking and risks above, Chongqing is at high risk of losing its land use efficiency and unique urban form of “a city of mountains and rivers.” Further urbanization in Chongqing is an opportunity to reverse the trends of increasing fragmentation and falling density.

The payoffs to a successful spatial transformation are significant. For example, Chongqing can potentially save up to 200 km² in land and RMB 34 billion in infrastructure costs by 2035. To illustrate the magnitude of the potential gains, the results of a scenario study are summarized in Box 8 following the three spatial transformations described below.18

Spatial transformation I: Pursue compact growth to reduce land consumption and increase economic density

Land should be managed as a scarce asset. This intervention implies two major reorientations:

- Shifting from rural land conversion to development by infill. Rather than filling all designated developable area in Chongqing’s present master plan, compact growth would first consider the infill capacity of existing urban areas and limit the expansion beyond it. This would curb unsustainable trends in land conversion.

- Managing land in a more flexible way. The redevelopment of land must aim for a minimum density, allowing a higher density near public transit to make the lines profitable and increase the accessibility to jobs for the population. The land may be divided into parcels smaller than the current superblocks to allow more flexibility and adaptability to the future needs of the market.

A good opportunity for implementing this vision is presented by the Liangjiang New Area in the northern section of the core-adjacent area. If planned well, the Liangjiang New Area could accommodate a significant amount of the region’s projected growth and potentially become a new engine of growth for the city (Box 6).

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**BOX 6  Liangjiang New Area**

Established in 2010 and located in central Chongqing, Liangjiang New Area is the third state-level development zone established by the Chinese government. With a total area of 1,205 km², it could accommodate a major portion of Chongqing’s projected growth. Liangjiang New Area is a growth priority for the city and an opportunity to increase economic density and agglomeration. The area already has a comprehensive multimodal transport network, including water, air, road, and railway transport. In addition, it has dedicated functional areas such as the China-Singapore Connectivity Demonstration Project, Port Area, Industrial Park, and Free-Trade Zone. As a result, growth has been fast, and according to the current development plan, the area’s GDP is expected to exceed RMB 1 trillion by 2020, equivalent to doubling Chongqing’s economy within 10 years.

If planned well, Liangjiang New Area would allow the city to increase its land use efficiency and absorb a significant part of the expected population growth of 5.8 million.


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a. According to Rankings of Local Governments in China 2017, the comprehensive development potential of Liangjiang New Area ranks first among 163 development zones in China (including 137 national-level development zones and 26 provincial-level development zones).
b. According to the approval document issued by the State Council, Liangjiang New Area will become “the leader among national experimental zones of comprehensive complementary reforms for rural-urban integration, an important sophisticated manufacturing and modern services base in inland China, a financial center and innovation center in upstream Yangtze River, an important gateway of opening up in inland China and a demonstration window of scientific development.”
c. The total GDP of Central Chongqing’s nine districts was about RMB 703 billion in 2016.
Spatial transformation II: Pursue transit-oriented development that integrates land use and transportation planning and articulates accessible densities

Integrating transport and land use planning will help reduce land needs, infrastructure costs, pollution, and congestion. Chongqing plans to expand its subway network fourfold to 820 km, with more than 480 stations—a length similar to the Seoul subway. This massive extension gives Chongqing the opportunity to shape its urban form efficiently, as other global cities such as Tokyo, Hong Kong SAR, and Seoul have done.

Average density is less important than articulated and accessible density (UN Environment 2018). Articulated density is achieved by multi-use construction around transit nodes in street networks with human-scale blocks that facilitate walking and diverse travel modes. The 5D Compact City Framework (Box 7) is a helpful tool for planners seeking to develop compact, connected, and polycentric cities.

**Box 7  The 5D Compact City Framework**

A city can combine multiple nodes of articulated density with a rich mix of housing, jobs, and amenities at the neighborhood level.

<table>
<thead>
<tr>
<th>DENSITY</th>
<th>Maximizing compact urban form while mitigating negative aspects such as air pollution and congestion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DENSIETY</td>
<td>Approx. 15,000 persons/km²</td>
</tr>
<tr>
<td>LOW DENSITY</td>
<td>Approx. 7,500 to 10,000 persons/km²</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIVERSITY OF USE AND INCOME</th>
<th>Neighborhoods with mixed income groups and diverse opportunities for jobs, commerce, and leisure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESIGN</td>
<td>Shaping cities so that urban residents benefit from the advantages of dense areas. Good design includes walkability, traffic safety controls, and tree cover.</td>
</tr>
<tr>
<td>DISTANCE TO TRANSIT</td>
<td>Transit options should ideally be accessible within 400–800 m.</td>
</tr>
<tr>
<td>DESTINATION ACCESS</td>
<td>Sustainable transportation modes that take people where they want to go.</td>
</tr>
</tbody>
</table>

Spatial transformation III: Design vibrant mixed-use neighborhoods as places for people based on Chongqing's unique landscape of mountains and rivers

This transformation consists of a reversal of Chongqing’s current superblock approach to give identity and a sense of place to Chongqing’s extensions. In particular, it requires the city to take the following steps:

- **Design neighborhoods that are sensitive to the unique mountain and river landscape of Chongqing.** Chongqing’s urban landscape should incorporate the city’s invaluable natural assets—the river, the mountains’ undulating ridges, and landscaped parks. This is a tried and tested strategy: unique landscapes of mountains and water have positively shaped the identity of cities as diverse as Hong Kong SAR, Seoul, San Francisco, Zurich, Rome, and Porto.

- **Retrofit existing neighborhoods and increase their livability.** This mainly includes improving the connectivity and permeability of urban blocks, developing mixed-use spaces, and enhancing public spaces and public facilities.

- **Plan the city using a variety of small mixed-use blocks.** Small blocks of less than 1.5 ha provide a human-scale environment with greater variety in built form and street patterns. Small blocks also offer a variety of public spaces, architectures, and activities. They should be developed with active

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**BOX 8  Payoffs for Successful Spatial Planning**

To highlight the stakes of getting spatial policy decisions right, two different urban growth scenarios were modeled and compared: a Trend scenario in which current patterns of development are extrapolated into the future, in particular the concentration of job growth in the urban core and the development of housing and single-use superblocks in the core-adjacent areas; and a Compact Growth scenario, in which development leads to a polycentric regional structure created through focused, walkable, mixed-use development around existing and planned transit nodes.a

The results are clear: land use, urban livability, household expenditures, infrastructure costs, and environmental sustainability are all strongly improved by the choice of compact growth. Specifically:

- **About 200 km² of land is saved, preserving a valuable asset for future expansion beyond 2035 and increasing economic density, agglomeration, and productivity.**

- **Cumulated expenditure on road, water, and sewage infrastructure to 2035 is reduced by 30 percent, achieving RMB 34 billion in savings and allowing, for example, the redeployment of public expenditure to R&D to improve competitiveness and extend social services such as education or health.**

- **Chongqing’s affordability is improved.** Household costs for transportation and home energy use will be reduced by 32 percent, achieving annual savings of RMB 5,100 per household.

- **Central Chongqing becomes less car dependent, with a reduction of congestion and an increase in the accessibility of jobs with affordable transportation.** The mode share of public transit increases by 9 percentage points, and total automobile travel is reduced by 40 percent.

- **Air quality, which currently fails to meet critical thresholds and threatens human health, is significantly improved.** CO₂ and air pollutant emissions from auto travel fall by 39 percent.

This modeling exercise demonstrates that successfully implementing compact growth, transit-oriented development, and new livable neighborhood planning and design can make a major contribution to Chongqing’s Vision 2035. The full details of the model are published in the technical report *Chongqing 2035: Urban Growth Scenarios*.

Source: Urban growth scenario modeling conducted by Calthorpe Associates for this report.

a. Both scenarios focus only on the area of central Chongqing and assume the addition of 5.8 million new residents and 4 million new jobs by 2035. To isolate the impacts of land use, both scenarios assume the same baseline factors for vehicle performance, energy efficiency, and fuel and energy emissions.
sidewalks and perimeter buildings to provide shared interior courtyards. UN-Habitat recommends that at least 40 percent of floor space should be allocated for economic use in any neighborhood and that land specialization should be limited to single-function blocks covering less than 10 percent of any neighborhood (UN-Habitat 2014).

**Strategic pillar 2**

**A regional strategy to increase connectivity and economic integration**

Three kinds of connectivity boost economic growth and help cities become important hubs or gateways: physical (infrastructure) connectivity, digital connectivity, and economic integration. Integrating these three dimensions generates significant economic output and high-quality jobs, and helps cities accumulate knowledge, with positive spillover effects on the broader economy.

**Chongqing stands out for its infrastructure and digital connectivity.** By combining road, river, rail, subway, and air transport links, Chongqing has developed a world-class transportation system (Box 9). This will be further strengthened once the Southern Transport Corridor rail link to Singapore is complete. Digital infrastructure is also strong, with 70 percent of households having broadband Internet and the existence of a city-level partnership with Alibaba.

**BOX 9  Chongqing’s World-Class Transportation System**

The Chongqing-Xinjiang-Europe Railway, a direct rail route from Chongqing to Germany, was established in 2010 and has brought Chongqing to the forefront of China’s trade with Central Asia and Europe. The 11,179-km journey from Chongqing to Duisburg takes only 14 days, compared to 34 days by sea, and is safer, cheaper, and more reliable. Most goods transported using this route are from multinational computer companies in Chongqing, including the technology giant Foxconn, which is a major supplier of Hewlett-Packard, Acer, and Apple. By August 2016, over 2,100 trains had been dispatched via this rail route, which is currently providing regular rail services to more than 16 Chinese cities and 12 European cities (HKTDC 2016).

**Rapid Expansion: China–Europe Freight Train Service**

- **2011 – Aug 2015** More than 900 trains
- **Sep – Dec 2015** About 400 trains
- **Jan – Aug 2016** More than 900 trains (annual growth rate: +130%)

Source: China Railway Corporation.
However, Chongqing's physical and digital connectivity has yet to translate into regional economic integration: Chongqing and Chengdu are fiercely competing to be the logistics hub and gateway for China’s southwest region, potentially leading to outcomes that are suboptimal for integrated regional development.

Chongqing may aim to become the region’s “center of gravity” by retaining its role as a key national hub in land and water logistics. Chongqing can increase its economic growth and participate in global economic flows by acting as a gateway to regional corridors that are supported by three-dimensional connectivity.

**BOX 9  Chongqing's World-Class Transportation System (cont.)**

Chongqing's road and rail construction

By 2016, the total length of the municipality’s road network—142,921 km, including 2,828 km of expressways—ranked 10th in China and 1st in the country’s western region. The total length of railways in the municipality was 2,231 km, and the pace of railway construction has accelerated with the construction of the mi (米) high-speed railway network. This network allows any part of Chongqing to be reached within two hours, the capitals of the surrounding provinces in less than three hours, and Beijing, Shanghai, and Guangzhou in less than six hours.

In 2016, the length of high-speed railways in operation amounted to 356 km, with 184 km under construction. However, the city’s railway development plan calls for significant growth and would bring the total length of the railway network to 5,800 km by 2030, including 2,032 km of high-speed railways. When complete, Chongqing will become an important transport hub connecting Europe and Asia with other parts of China.

Connectivity transformation I: Build a major logistics hub supported by integrated land, air, and water transportation networks

**Chongqing should leverage its location at the confluence of land, air, and water transport networks.** Inland waterway transport is a unique feature of Chongqing’s freight transport system. Despite the constraints of Yangtze River transportation, Chongqing can focus on the intermodal capacity of its port as a transshipment center and as an inland link to major downstream ocean ports. Moreover, linking Chongqing’s ports to the rail route to Europe will strengthen Chongqing’s role as a hub for container traffic between Chongqing and global export markets. Interventions that could promote Chongqing’s development as a major logistics hub are shown in figure 10.

Connectivity transformation II: Promote regional economic integration, including through the Chengdu-Chongqing corridor

**Moving away from competition to cooperation can produce win-win outcomes for both Chongqing and Chengdu.** Both Chongqing and Chengdu can benefit from their integration into an economic corridor supported by efficient transportation systems; this will build a much stronger and broader base for the ASEAN region and beyond. Specific actions to promote cooperation may include the following:

1. Developing a joint development strategy encompassing economic planning, investment, spatial strategy, and transport
2. Establishing satellite cities along the corridor to promote the spatial agglomeration of industries, and to accelerate the flow of goods, population, and information
3. Strengthening high-level coordination between Chongqing, Sichuan, and Chengdu

Connectivity transformation III: Strengthen Chongqing’s digital infrastructure

**In today’s world, physical connectivity is not enough.** The exponential growth of data is transforming every aspect of the economy, including industrial and logistic processes. In global cities, firms move to where they can access high-speed broadband infrastructure. The digitization of industrial production will require Chongqing to massively invest in its digital connectivity and bring its broadband speeds up to the levels of global cities.

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**Figure 10** Interventions That Enable Chongqing to Develop as an Integrated Multimodal Logistics Hub.

- **An important logistics and trade center along Belt and Road routes**
  - Consolidating Chongqing-Xinjiang-Europe Corridor, China-Russia Corridor, and China-Central Asia Corridor and other resources; and building an international hub targeting Europe and Asia along the Belt and Road routes

- **An international flight transfer hub on the Eurasia continent**
  - Extending international air routes and making adequate use of fifth freedom rights to create a regional international air transport hub

- **A national-level multimodal transportation hub in the ASEAN region**
  - Developing a multi-mode transportation hub in western China, number one transport interchange in southwestern China, and a key terminal for China-Europe trains
Strategic pillar 3
An innovation strategy to climb the value chain and create the conditions for a skilled labor force

Spatial transformation and connectivity are important, but not enough, for Chongqing to achieve Vision 2035. The innovation economy, underpinned by talent and creativity, has become a driving force in transforming entire industries, often at an accelerated pace. Cities are making massive investments in innovation and R&D to support and attract technology-driven industries that are leading the digital revolution and disrupting established markets. To succeed in this transformation and attract digital industries, a strong skilled labor force is necessary. Human capital—the skills, knowledge, and experience of the labor force—will be central for future economic development and innovation (Quintini 2014).

Traditionally, Chongqing has been a city of production, focusing on the application of technology rather than its development and innovation. However, while this approach has served the city well in the past, benchmarking has shown that Chongqing has relatively low R&D expenditure (Figure 11 and Figure 12), both by the municipality and by industrial enterprises located in Chongqing. The latter is a cause of concern, given that much innovation is driven by private sector participation in the research space. In addition, Chongqing’s lack of leading universities and research laboratories puts the city at risk of missing out on future economic opportunities (Box 10).

Innovation Transformation

Chongqing should prioritize attracting and developing human capital to move from production to innovation. To support Chongqing’s new path to growth, the Chinese government has made innovation a priority in economic planning through a number of large-scale initiatives. Made in China 2025, for example, is a plan announced in 2015 to improve and modernize China’s manufacturing in 10 key sectors. This strategy aims at transforming Chongqing from a traditional city of production—one focused on the application of technology rather than its development—into a driving force of the innovation economy. Building on existing strengths, such as market size and well-developed supply chains, Chongqing should aim to become an attractive location for the development and manufacture of innovative products. To succeed in this transformation, a strong skilled labor force is necessary, and
developing and attracting human capital—the skills, knowledge, and experience of the labor force—will be key to future economic development and innovation.

Innovation transformation I: Increase R&D expenditure

**Chongqing should increase its R&D expenditure.**

Catching up with China’s average of 2 percent of GDP invested in R&D should be a minimal goal; striving to reach levels similar to those of Korea (4.15 percent) or Japan (3.49 percent) could be an aspirational target.

Innovation transformation II: Implement a two-track solution to boost Chongqing’s innovation capacity

**Short-term and long-term strategies should be combined to ensure strong talent is abundant in Chongqing.**

**Chongqing.** In the short term, Chongqing should aim to attract existing talent through enhancing its talent-seeking programs. In the long term, the city should aim to grow its own talent by developing world-class universities to create the right skill mix. In this respect, Shenzhen is a good example to follow (Box 11).

Innovation transformation III: Build a large skilled workforce

**Chongqing should aim to transform its workforce into one with the highly qualified human capital that high-end industries need.** To achieve this goal, it must improve its vocational education. Chongqing can learn from Germany, whose dual education system has allowed the country to build a large technically skilled labor force. It must also build on the strengths that have enabled it to attract leading global companies like Apple to China (Box 12).
Innovation transformation IV: Take advantage of its large market and make the city an important base for the application of innovative products and technologies

Chongqing can leverage its sheer size and industrial base to become a laboratory for product development. Chongqing may not be a major cradle of innovation in the near future, but it could become an attractive location for the development and manufacture of innovative products. Chongqing can also rely on the sharing of innovations from other regions through transplantation and can create local value from them.

Innovation transformation V: Cultivate a creative industry and entrepreneurship spaces for the development of small and medium enterprises

The seeds of a start-up scene should be further cultivated. In recent years, about 600 entrepreneurial spaces (including those under construction) have opened in Chongqing (China Center for International Economic Exchanges 2017). Providing access to markets, professional services, and finance channels, they offer affordable, practical, comprehensive, and open services for innovation and entrepreneurship. It is important to note a common feature among the creative industries: the innovation players are mostly small and medium-size enterprises, whose size complements the structure of Chongqing’s scientific and technological industry.

Strategic pillar 4

A strategy that addresses potential labor force shortfalls and creates equal opportunities for all

Inclusive growth opportunities are especially important for cities seeking to develop their knowledge economy. Human capital is an important base for economic development, particularly as economies shift toward advanced manufacturing and high-value-added services. Whether a city can attract high-caliber human capital depends on a number of factors, including opportunity, affordability, and quality of life.
Chongqing Municipality has had net population outflows in the past, but there are signs that the trend may start to reverse. Chongqing’s affordability—especially low rental and housing prices—make it an attractive destination for migration.

However, inequality, between urban and rural residents, continues to be a challenge. The urban-rural income gap remains significant. On average, the per capita disposable income of Chongqing’s urban residents is RMB 27,239, while it is only RMB 10,505 for rural residents. A significant urban-rural gap is also visible in education: in Chongqing as a whole, the average enrolment of young people (aged 0–17) in primary and secondary education is 67 percent, but in central Chongqing it is 98 percent, while in the municipality’s northeastern and southeastern areas it is only 55 percent. There are similar differences in the number of schoolteachers, with about twice as many schoolteachers for each registered 0- to 17-year-old in central Chongqing as in other areas (Chongqing Municipal Bureau of Statistics and NBS Survey Office in Chongqing 2016).

Becoming a global city entails the risk of even more extreme inequalities within the city, which must be carefully managed. Inequality in some global cities, such as London and New York (Box 13), is more extreme than in their respective national economies. To avoid the downsides associated with high inequality, and in particular the squandering of human capital that is often associated with it, close attention to social inclusiveness is required as Chongqing continues to grow.

Improving Inclusivity

This strategy aims to respond to population challenges as manifested on multiple fronts: looming labor shortages, an aging population, and fairness issues. Delivering affordability and a high quality of life for all its residents will be crucial for Chongqing to attract and retain a high-quality workforce, which will in turn enable high-productivity economic activity in both manufacturing and services and put the city in a strong position to weather the coming demographic shift. By encouraging the free movement of people and jobs, Chongqing can become a more inclusive city while gaining an edge over other cities by attracting skilled labor.

Improving inclusivity I: Ensure equality of opportunity across urban and rural districts with social services and a free flow of people

Mobility speeds up economic transformation. Labor mobility and the free flow of people will be essential to accelerate the transformation of surplus low-

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**BOX 13  Social Inequity in New York and London**

Income inequality is high and increasing in New York City. In 2006, the poorest 50 percent of New Yorkers earned 7.4 percent of the city’s total income. By 2014, this share had further fallen to only 5.6 percent. Manhattan has the most extreme income inequality in the United States. The top 5 percent of households earned US$864,394, or 88 times as much as the poorest 20 percent, according to the Census Bureau’s American Community Survey. New York City also recognized in 2014 that “despite a rise in employment, nearly half of New York City’s population is living near poverty levels, (Oh 2014).”

Income and wealth inequalities are also much higher in London than anywhere else in the United Kingdom. While income inequality has declined in the last five years, wealth inequality has increased. The situation can be summarized in a few striking figures: 50 percent of London’s wealth is owned by the richest 10 percent of its households, while the bottom 50 percent own just over 5 percent of the wealth. The income of someone in the top 10 percent in London is eight times greater than that of someone in the bottom 10 percent. According to Trust for London (Tinson et al. 2017), wealth inequality is even more extreme—the wealth of someone in the top 10 percent in London is 295 times greater than someone in the bottom 10 percent. Moreover, in 2017, 27 percent of Londoners lived in poverty, down just slightly from 29 percent in 2011. Housing costs are the main factor contributing to London’s high poverty rates.

productivity and low-income rural jobs into medium-to high-skill industrial jobs, as well as to equalize opportunities and make rural and urban wages converge.

**Mobility must be supported by appropriate public policy.** The profound transformation of the economic and social structure entailed by large-scale migration will have to be supported by policies providing basic social welfare for all citizens. All citizens, wherever their origin, should benefit from social protection system, as well as care services adapted to the aging population. The goal of equal opportunities and basic security is therefore important, both to create a more inclusive society and to support growth by strengthening human capital. By providing social protection and equal opportunities, Chongqing will promote a more efficient distribution of workers and hence increase labor productivity.

**Improving inclusivity II: Invest more in education and eliminate spatial and social biases to expand opportunities for migrant workers and rural areas**

**Education investment can reduce outmigration and spatial inequalities.** To reverse outflow migration trends and build a healthy, diverse economy that provides opportunities at all levels of income and skills, Chongqing should not only offer incentives to attract talents but also offer training and education to the low-skilled and poor, including migrant workers. To do so, Chongqing must follow other cities and increase its investment in education. Shanghai, for example, launched a policy to provide universal compulsory education for migrant children.

**Improving inclusivity III: Maintain affordability and increase access to housing for migrants**

**To preserve its key competitive advantage, Chongqing should continue to ensure affordable housing and low costs of living.** Relatively low production and living costs have become Chongqing’s competitive advantages in building a thriving and inclusive economy. Chongqing Municipality needs to continue to strengthen the management of housing costs and improve the city’s affordability to maintain these relative advantages. To simultaneously ensure housing affordability and good access to jobs, housing planning should be integrated with economic and transportation planning.

**Strategic pillar 5**

**A green and low-carbon growth strategy to decouple economic growth from resource use**

Cities can decouple their economic growth from environmental impacts by bundling policies that simultaneously create a compact urban form, enhance transit accessibility, and improve sectoral energy efficiency. Chongqing is at a crossroads—it will soon reach levels of GDP per capita at which world cities typically decouple economic growth from energy and resource use and their associated carbon emissions and pollution. However, decoupling does not happen automatically. It requires cities to adopt green growth policies.

**The Chongqing economy is both energy-intensive and emissions-intensive.** The city emits about twice as much CO₂ per unit of GDP as Shanghai and Beijing (Figure 13). These high emissions are driven by a large share of heavy industries, a large construction sector, and an energy mix dominated by fossil fuels (72 percent), with coal alone representing about 60 percent of total energy consumption (Figure 14) (Chongqing Municipal Bureau of Statistics and NBS Survey Office in Chongqing 2016). This has resulted in poor air quality, with the average concentration of fine particulate matter well above WHO critical thresholds.

**Chongqing’s urban form and superblock-driven expansion pattern are material-intensive and energy-intensive.** An urban form that encourages a car culture generates more greenhouse gas (GHG) emissions and threatens air quality. Superblock expansion entails significant increases in energy embodied in infrastructure, infrastructure costs, energy use, and CO₂ emissions. Moreover, research in Jinan has shown that households living in superblocks use at least twice as much energy for transportation, heating, lighting, water, and the built environment as those living in any other Chinese urban form (Massachusetts Institute of Technology and Tsinghua University 2010).
To decouple economic growth from energy consumption and emissions, Chongqing should push for green and low-carbon growth transformations in energy, urban form, buildings, and transport.

Green and low-carbon growth I: Reduce the energy intensity of the economy and decarbonize the energy mix by increasing the share of renewables

The emission intensity of Chongqing’s economy can be reduced through two levers: reducing the energy intensity of GDP and reducing the emissions intensity of energy use. The first is primarily structural and requires Chongqing’s industry to move up the value chain toward high-end manufacturing. Improving the energy and resource efficiency of the building and construction sectors with efficient buildings and districts will be important contributions to bringing down energy intensity. Concerning the second, deploying technological solutions to improve the technological efficiency of energy conversion and use will be crucial. This step is in line with China’s national energy and environmental priorities, which include decarbonizing the energy mix and increasing the share of renewables. China intends to raise the share of nonfossil energy in primary energy consumption to about 20 percent by 2030, so that nonfossil energy supplies by 2030 will be seven to eight times those of 2005.

Green and low-carbon growth II: Reduce transport emissions by planning for a compact urban form

Urban compactness, which facilitates development of car-light cities, can decrease transportation energy use, emissions, pollution, and congestion. Compact city policies are an important lever to reduce transport environmental impacts and deliver significant carbon and pollutant emissions reduction. In the urban growth scenario conducted for this report (Box 8), the GHG and pollutant emissions associated with automobile use are reduced by 40 percent compared to the Trend scenario. Like Singapore, Chongqing should systematically move toward becoming a car-light city through a combination of carrot and stick approaches, whereby driving private vehicles is
made more difficult (through the reduction of parking facilities and increased toll charges, for example), while public transit, walking, and cycling are encouraged or subsidized.

Green and low-carbon growth III: Improve the energy and resource efficiency of the building sector with efficient buildings and districts

The building sector can be an important driver of improved environmental performance in Chongqing. In 2009, building heating accounted for 8 percent of Chongqing’s emissions, more than road transport, at 7 percent (Liu 2016). Energy efficiency measures—such as insulation, renewable micro-generation, conversion of heating energy into electricity (through air- and ground-source heat pumps), and district heating from renewable energy sources—can contribute significantly to the reduction of emissions. These policies are already deployed in cities around the world and can have significant impacts. For example, Stockholm has experienced a 33 percent reduction in greenhouse gas emissions from heating and electricity in recent decades, with emissions falling from 3.8 tCO₂e to 2.3 tCO₂e per person between 1990 and 2010 (LSE Cities 2013).

Green and low-carbon growth IV: Leverage Chongqing’s automobile base to develop the fast-growing electric mobility sector

Chongqing can secure a double win by doubling down on electric mobility. Greening urban transport through electric mobility can simultaneously reduce emissions and serve as a potential driver of growth in Chongqing’s automobile industry. Leveraging Chongqing’s existing automobile base, Chongqing can become a global leader in producing and using electric cars.