

Chongqing at Crossroads: How Urban Planning and Infrastructure can Support Sustainable Industries.

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1 ABSTRACT

Chongqing, the “Furnace of China” makes a potent case against the consequences of the traditional model of industrial growth left unchecked. Environmental degradation and pollution threaten not only its residents’ quality of life, but also its future as an economically competitive municipality. Chongqing still possesses abundant resources and low-cost labour, however. But to continue to remain viable, Chongqing needs to apply a sustainable, integrated development model that addresses local context in urban planning, infrastructure resource efficiency, and especially industrial symbiosis. The municipality’s economic vitality demands greater industry collaboration and leadership. Chongqing is at a crossroads. This study underscores the need for action and provides forward-thinking recommendations that will ensure Chongqing continues to thrive and set the model in western China as a centre for sustainable industries.

2 CHONGQING AT CROSSROADS

Chongqing is currently the only major municipality in western China and is a leading center of foreign investment and manufacturing. It has benefited from government policies, such as the Grand Western Development strategy and various Five Year Plans, building a large industrial and agricultural base centered on domestic consumption.

However, Chongqing still lags behind Beijing and coastal cities such as Shanghai and Guangzhou. It also faces increasing competition from its western counterparts, Chengdu and Xi’an. Its rating in the United Nations Human Development Index – a cumulative average of per capita gross domestic product, life expectancy and educational attainment levels – is moderate at 0.756. This places Chongqing slightly below the national average of 0.78, but far behind its coastal counterparts who are around 0.9, and even regions in central China that are around 0.8.

Additionally, it is facing a more affluent and demanding population, greater resource and infrastructure constraints and severe environmental pollution. The city is infamously known as the “furnace of China.” Indeed, Chongqing’s environmental degradation has reached a point where it now jeopardizes the city’s long-term economic competitiveness.

For Chongqing to continue to be economically competitive, support its existing and emerging industries and attract and retain critical human capital, it needs to develop sustainable urban planning and infrastructure. While Chongqing has made notable efforts in this area, especially in its master plan, much more can be done in a more coordinated fashion.

3 SUSTAINABLE URBAN PLANNING AND INFRASTRUCTURE

From this point of view, urban planning involves high density, multifunctional, mixed-use living, with extensive greenery and biodiversity that responds to microclimatic conditions and reduces climate change effects. Industrial considerations include location, orientation and use.

Resource efficiency is important for energy, water, waste, transport and agriculture. This first involves optimizing demand – decreasing the need for energy, water, and travel, and limiting the waste produced. Once all reasonable efforts to reduce demand have been implemented, the next focus should be on making the quality and supply of resources as efficient as possible. Resource-intensive industries should be discouraged, and instead the focus should be on the following:

- **Energy:** Stronger building codes, audits and rating systems. Developing more expensive renewable energy should be the last option, though Chongqing’s agricultural base provides good biofuel potential. Industry should consider energy efficiency agreements, manufacturing, processing and clean technology opportunities.

- **Water:** Better watershed management, pollution prevention, water quality, sustainable agriculture and technologies to provide quality and reliable water supplies, such as rainwater harvesting, water capture and recycled water management. Industrial considerations include quality and quantity of storm water runoff, wastewater treatment and monitoring discharge.
- **Waste:** A resource waste management strategy follows reduction, reuse, and recycling principles in construction and post-construction phases, promotes circular economy strategies and applies energy recovery technologies. Industrial considerations include waste streams, co-location and the promotion of industrial symbiosis.
- **Transport:** When travel is needed, it should be undertaken by walking, biking or public transport, including bus rapid transit. Cars should be the last option, and inhabitants should be encouraged to use car clubs or electric/hybrid vehicles. A Low Emission Strategy provides a package of measures to help mitigate the transport impacts of a development, and provide further access and ease of travel for industries and people, connecting external and internal transport systems. Industrial considerations include travel mode and frequency by industry and household for both leisure and work.
- **Agriculture:** Having a healthy, stable, affordable, and local food supply has always been the backbone of China's self-sufficiency food mandate. Traditional industrial farming practices should change to a sustainable food production model by adopting small scale farming enterprises, which promote more labor intensive modes of production, technological pluralism, greater adaption to local resources for higher agricultural productivity and improved resource efficiency. Industrial considerations include resource input and output factors for enhanced production and better production methods.

4 SUSTAINABLE INDUSTRIES

Resource prices should be competitive, determined in terms of implications for society. Consumption should be metered for informed tracking, with policies to encourage better choices and discourage negative practices. The most effective way for Chongqing to move towards a sustainable model of economic development is to take a holistic, integrated approach to identifying solutions, one that is grounded in an understanding of the social and economic cost of inaction. Breaking the vicious cycle of unsustainable development requires an understanding of how these issues are inter-related, controlled and influenced not only through technological means, but also through policies, planning and education.

Chongqing has identified eight pillar industries that it wants to develop, expand and promote: Automobiles and motorcycles; equipment manufacturing; electronic information; biopharmaceuticals; logistics; business and trade; service outsourcing and finance. In light of the sustainable infrastructure and planning opportunities highlighted, and considering the integrated systems approach, there are many opportunities for these industries to develop in a more environmentally-friendly and sustainable manner.

They include reducing the resource intensity attributed to manufacturing and distribution, minimizing the hazardous waste produced, applying industrial symbiosis to co-locate and share resources; establishing environmental and health quality-control management systems and creating an attractive and distinctive urban space.

Urban competitiveness is defined as “a city’s ability of creating more wealth in a faster and better manner than other cities in the world.”¹ Traditionally, the three key components considered vital to economic competitiveness have been²:

- (1) Providing adequate infrastructure (transportation, telecommunications, water & sanitation, etc.).
- (2) Improving public services (education, health, public security, housing, etc.).
- (3) Reducing the cost of doing business (e.g., fast processing of new business licenses, tax incentives, labor laws, economic zones with special privileges, etc.).

¹ Global Urban Competitive Project. <http://www.gucp.org/en/>

² Ming, Zhanga. “What Can Cities Do to Enhance Competitiveness? Local Policies and Actions for Innovation,” *En Breve*, The World Bank. 2008.

Chongqing has made great strides in creating an attractive environment that is conducive to business. It has low costs for labor and resources, and is improving its transport and infrastructure. However, its poor environmental health and quality of life have deterred industries and people, especially highly-skilled workers and tourists, from coming to the city. It has not invested enough in innovation and human capital. Research and development need to be applicable to industry. Education should be translated to the needs of the market at all levels and job types.

5 STAKEHOLDER COLLABORATION

Collaboration between stakeholders is essential to transforming Chongqing into an economically competitive, sustainable municipality. Stakeholders include the local government, the public and industry. Each has a role to play in developing, promoting and participating in initiatives that support sustainable economic development and share a sense of urgency to drive decisive action.

- **Government:** The government sets the vision, with a long term strategic development plan and qualitative and quantitative targets. It should present bold and innovative actions, but also communicate and coordinate with other stakeholders to reduce risks of uncertainty. Heavy investment in sustainable infrastructure, education and evaluation should be made. Government should demonstrate by example and be sensitive to the needs of its constituents, especially the less fortunate in society.
- **Public:** Their mobility allows them to obtain the best skills, practices and knowledge; and to promote Chongqing nationally and internationally. Increased affluence, technology and education puts the population in a better place to demand greener products and processes from industry.
- **Industry:** Industry's role can be divided into three areas to take advantage of various sustainable opportunities: core business (the products and services a company makes and how they are designed), sustainable operating practices (the systems, practices and processes used by companies to manufacture and assemble their products and operate their facilities) and external relations (the leadership role that companies can play within their industry, supply chain and communities).

6 CONCLUSION

Chongqing is at a crossroads. Continued economic growth using the traditional industrial model will accelerate environmental damage, deplete natural resources, jeopardize public health and deteriorate the quality of life, which eventually could drive people and investment away as well as offset the economic gains achieved through growth. For Chongqing to fulfill its dual goals of retaining economic competitiveness and setting the model for development in the west, it needs to apply a sustainable, integrated development model. Such a model would assess the local context in urban planning and infrastructure; and promote resource efficiency, industrial symbiosis, and greater collaboration and leadership for industry.

Chongqing can fulfill its vision as a center for sustainable industries, and set the path for sustainable development and economic competitiveness if it acts creatively in a coordinated manner.

7 REFERENCES

- Global Urban Competitive Project. <http://www.gucp.org/en/>
 Ming, Zhanga. "What Can Cities Do to Enhance Competitiveness? Local Policies and Actions for Innovation," En Breve, The World Bank. 2008.