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An Outline of Strategies for Building an Innovation System for Knowledge City

Keith Crane, Howard J. Shatz, Shanthi Nataraj,
Steven W. Popper, Xiao Wang

RAND

Environment, Energy, and Economic Development

Summary

China's Guangzhou Development District (GDD) is focused on creating an environment conducive to innovation in a new development called Sino-Singapore Guangzhou Knowledge City (see Figure S.1). Jointly developed by GDD and Singbridge of Singapore, Knowledge City is to be a new environmentally and technologically advanced city that hosts innovative industries and their associated knowledge workers. The project is designed to spur the transformation of Guangzhou from less-complex manufacturing to higher-wage research- and innovation-based knowledge industries.

When completed, Knowledge City will be one of several components of GDD, a specially designated economic district in the Luogang District of Guangzhou. GDD includes Guangzhou Science City (also part of the Guangzhou High-Technology Industrial Development Zone), the Guangzhou Economic and Technological Development District, the Guangzhou Free Trade Zone, the Guangzhou Export Processing Zone, and Guangzhou International Biological Island.

This document outlines a strategy for Knowledge City. It stems from research and analysis conducted by the RAND Corporation in collaboration with GDD between May 2011 and May 2012. This report is a companion volume to another RAND report, *Creating an Innovation System for Knowledge City* (Nataraj et al., 2012), a compilation of results from the interim analyses conducted for this project and supporting evidence for the conclusions presented here.

Figure S.1
Proposed Knowledge City

SOURCE: Sino-Singapore Guangzhou Knowledge City.
RAND *MG1240-S.1*

Outline of the Strategy: The Situation, Guiding Policy, and Actions

To achieve its goal of establishing Knowledge City as a new environmentally and technologically advanced city that hosts innovative industries and their associated knowledge workers, GDD must convince advanced companies and talented individuals to stake their futures on an unproven new development. To convince them, GDD must instill confidence in potential partners that it possesses the attributes to drive the success of an innovation-based cluster. Emphasizing the attractive-

ness of its existing assets is one way to instill such confidence. Another is to create innovation-friendly assets that other regions will find hard to replicate. Creating a reputation for having these attributes could assist in attracting innovation-oriented firms to Knowledge City; the presence of these firms would reinforce Knowledge City's reputation for innovation, thus attracting more innovation-oriented firms to the area and creating a virtuous circle that would make it difficult for other regions to catch up.

The strategy for Knowledge City needs to achieve three goals to foster the creation of an innovative area:

1. Attract high-technology companies and enable their growth.
2. Attract and retain highly skilled, innovative people.
3. Ensure the availability of innovation-oriented financing.

Companies, people, and financing form the three pillars of an innovation system. Underlying them are the legal and regulatory environment and the business support environment. When all five of these elements come together to support innovation, the result is a cluster of innovative high-technology firms.

The actions that we present as foundational to a strategy focus on companies, people, and financing. They also have a direct effect on the presence of innovative companies, talented workers, and innovation-oriented financing and improve both the legal and regulatory environment and the business support environment.

A Roadmap for Strategic Actions

Based on our research, we propose that GDD take action in several policy areas to fulfill each of its three goals. Tables S.1, S.2, and S.3 denote the specific policy area into which each action falls; the priority for implementation (high, medium, or low); the ease of implementation (easy, medium, or difficult); and the order of sequencing (early, middle, or late). In each goal area (companies, people, and financing), we suggest that the actions be taken in the order listed.

Attract High-Technology Companies and Enable Their Growth

GDD will want to market Knowledge City, attract an anchor institution or institutions (defined as a prominent company, research institute, or university that will attract researchers and suppliers), and improve the overall innovation environment. Table S.1 summarizes the actions and policies to support the achievement of this goal.

Table S.1
Summary of Actions to Attract High-Technology Companies and Enable Their Growth

Policy Area	Action	Priority	Ease	Sequencing
Marketing	Hire a marketing or public relations company.	High	Easy	Early
	GDD will need to make Knowledge City known to prospective investors and workers. Competition for investors and knowledge workers is fierce: Professional assistance will be needed to craft the message.			
Anchor institutions	Attract an anchor institution.	High	Difficult	Early
	An anchor institution will attract researchers and suppliers and will increase the business community's confidence in the success of Knowledge City.			
Innovation environment	Set up an office to assist companies with all legal, administrative, and financing issues.	Medium	Medium	Early
	Such an office should track all relevant laws and regulations, all available incentive programs, and the activities of competitor regions.			
Innovation environment	Establish a "case officer" system for each company, eventually housing the case officers in a general assistance office.	Medium	Easy	Early
	The case officer can provide personal assistance to each company and help companies obtain the benefits for which they qualify.			

Table S.1—Continued

Policy Area	Action	Priority	Ease	Sequencing
Innovation environment	Have the office and case officer help companies apply for and receive all tax and non-tax incentives for which they are eligible.	Medium	Medium	Early
	The office and case officer can help Knowledge City companies more easily work through government requirements.			
Innovation environment	Ensure that non-tax incentive packages, such as grants, loan subsidies, or direct purchases by GDD on behalf of firms, can respond to the unique needs of innovative firms.	Medium	Easy	Middle
	Although assistance with land and buildings can always help, non-tax incentives should also include help with making expensive technical equipment or laboratory space available to firms.			
Innovation environment	Support initiatives by high-technology firms in Knowledge City to market their products to East Asia.	Medium	Medium	Middle
	Selling to demanding markets like those in East Asia will spur product innovation and improvement.			
Innovation environment	Make Knowledge City a zone of intellectual property rights (IPR) enforcement.	Medium	Difficult	Middle
	Weak IPR enforcement can affect the quality and type of investment. Ensuring that intellectual property (IP) will be protected can make Knowledge City more desirable to innovators.			

Table S.1—Continued

Policy Area	Action	Priority	Ease	Sequencing
Marketing	Sponsor an annual international trade fair or conference.	Low	Easy	Late
	The purposes of such a trade fair would be to highlight Knowledge City as a location for the particular industry and to create connections between Knowledge City businesses and suppliers and customers from around the world.			
Innovation environment	Expand assistance for international patenting.	Low	Medium	Late
	Having Chinese-origin inventors pursue patents in the most developed countries can help inventors upgrade the quality and originality of their inventions.			

Attract and Retain Innovative People

GDD will want to ensure that the quality of life in Knowledge City is high, making it more attractive to knowledge workers. GDD will also want to adopt policies to directly attract talent and returnees (i.e., local workers returning from overseas), enhance labor flexibility, and facilitate the creation of networks. Table S.2 summarizes the actions and policies to support the achievement of this goal.

Table S.2
Summary of Actions to Attract and Retain Innovative People

Policy Area	Action	Priority	Ease	Sequencing
Workers and networks	Establish an advisory council.	High	Easy	Early
	Drawn from investors and successful entrepreneurs, such a council should provide GDD with valuable advice and form the heart of a network.			

Table S.2—Continued

Policy Area	Action	Priority	Ease	Sequencing
Quality of life	Ensure that rail transit connections to Knowledge City are completed and that trains run frequently.	High	Difficult	Early
	Rapid, high-quality public transport will enable people to live where they want while still conveniently commuting to Knowledge City.			
Workers and networks	Increase efforts to attract returnees to Knowledge City, possibly by hiring a professional recruitment firm.	High	Medium	Early
	Returnees often have special skills that can boost innovation in Knowledge City.			
Quality of life	Attract high-quality middle and elementary schools to Knowledge City.	High	Medium	Middle
	Talented workers will want to send their children to good schools and will want to live where they can find such schools.			
Quality of life	Attract a destination shopping center to Knowledge City and facilitate the creation of entertainment venues.	Medium	Difficult	Middle
	These retail and entertainment establishments will make Knowledge City a more desirable place to live and work and can facilitate the formation of networks as well.			
Workers and networks	Facilitate the development of networks among people who have received assistance from GDD by creating opportunities for them to meet.	Medium	Medium	Middle
	Networks will allow for more informal information sharing and will help generate ideas.			

Table S.2—Continued

Policy Area	Action	Priority	Ease	Sequencing
Workers and networks	Facilitate cooperation with overseas Chinese professionals from Guangzhou and Guangdong Province.	Medium	Medium	Middle
	Overseas Chinese professionals can share their unique skills and open up channels for investment and trade.			
Workers and networks	Work on a local and regional basis to smooth out non-legal aspects of laying off workers and shutting down failing firms. For example, establish a job training and placement program.	Low	Medium	Late
	Labor flexibility will enable employers to find the right workers and workers to find the right jobs, if they have lost their jobs. GDD can enhance flexibility by providing information on employment opportunities and otherwise assisting laid-off workers in finding new jobs.			
Workers and networks	Work with provincial and national governments to improve the legal environment for laying off workers and shutting down failing firms.	Low	Difficult	Late
	Businesses in GDD find it difficult to lay off workers, but such labor flexibility is important for innovative areas. Longer-term legal reforms may be necessary.			
Quality of life	Create events to make Knowledge City an exciting destination.	Low	Easy	Late
	Not only will such events make Knowledge City a more desirable place to live and work, but they could help with marketing.			

Table S.2—Continued

Policy Area	Action	Priority	Ease	Sequencing
Workers and networks	Review and improve non-compete clauses.	Low	Difficult	Late
	When workers change jobs, they may bring valuable skills and knowledge to their new companies. Non-compete clauses in labor contracts are important, but if they are too strict they could limit valuable information spillovers. GDD will want to ensure that non-compete clauses protect IP but also foster the dissemination of knowledge and skills.			

Ensure the Availability of Innovation-Oriented Financing

GDD will want to increase the availability of commercial, innovation-oriented financing with appropriate regard to risk and ensure the presence of competitive commercial banking in Knowledge City. Table S.3 summarizes the actions and policies to support the achievement of this goal.

Table S.3
Summary of Actions to Ensure the Availability of Innovation-Oriented Financing

Policy Area	Action	Priority	Ease	Sequencing
Innovation-oriented financing	Assist in the creation of angel investor networks.	High	Medium	Early
	Entrepreneurs in GDD face challenges accessing early-stage financing. This will likely apply to entrepreneurs in Knowledge City. One way to fill this gap is to create formal networks of angel investors and give them the opportunity to regularly review promising investment opportunities.			

Table S.3—Continued

Policy Area	Action	Priority	Ease	Sequencing
Banking	Ensure the presence of competitive commercial banking in Knowledge City.	High	Easy	Middle
	Even if innovation-oriented financing is available, innovative firms will still need commercial banking services. GDD will need to ensure a competitive commercial banking presence in Knowledge City.			
Innovation-oriented financing	Facilitate private venture investment.	Medium	Medium	Middle
	International experience shows mixed results with government-sponsored venture funds. Private venture capital has been better able to judge business prospects and risks. One way to involve private venture capital is by forming partnerships between foreign or domestic firms and government-sponsored firms.			

Building on the Roadmap for Strategic Actions

This outline and the designated actions presented in Tables S.1–S.3 serve as guidance for a fully articulated strategic plan. That strategic plan should guide implementation by

- providing instructions for how the coordinated set of actions will be taken
- identifying who will take the actions
- setting out a timetable for the actions
- estimating the cost of the actions
- creating a full set of measurement indicators to evaluate outputs during the course of the planning and outcomes after the plan has been implemented.

This outline focuses on high-technology companies. However, it is important to recognize that such companies also need a variety of non-technology businesses to provide standard goods and services needed by all businesses; thus, a full strategic plan may need to differentiate between tasks to attract and support high-technology businesses and tasks for other types of businesses. Likewise, while we discuss various types of infrastructure that relate directly to increasing Knowledge City's potential to serve as a site of innovation, a full strategic plan should consider other infrastructure, including water, electricity, transportation, telecommunications, and sewerage. A strategic plan for Knowledge City will also need to be coordinated with urban development plans for surrounding areas.

The outline and the proposed strategy should serve as the basis for effective coordination and cooperation between GDD and Singbridge in implementing their marketing plans. Both have strong incentives to achieve success in Knowledge City. A strategic plan will be an outwardly visible signal of commitment by GDD that will help attract scientific, engineering, and entrepreneurial talent to Knowledge City.

Even with the best strategic plan, creating Knowledge City will be a long-term process that will require both consistent effort and flexibility in implementation. Continuity and consistency of policies will be particularly important. At the same time, the detailed strategy that will be the outgrowth of this outline should include mechanisms for reviewing policies and changing actions as the Chinese and global economies change and as Knowledge City develops.