

THOUGHT LEADERSHIP BRIEF

KEY POINTS

- ▶ Many stakeholders are concerned that Hong Kong is “losing its competitive edge”
- ▶ A recent research report finds that:
 - non-positive interventionism no longer works; and
 - Hong Kong’s research funding model needs improvement.
- ▶ Hong Kong should rejuvenate technology development through high-level government leadership by:
 - informing government decision-making with professional and technical expertise;
 - nurturing human capital and technological talent; and
 - facilitating innovation collaboration between Hong Kong and especially the Greater Bay Area.

Realizing Hong Kong’s Innovation Potential in the Greater Bay Area

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Issue

Important stakeholders have become increasingly concerned that Hong Kong is losing its competitive edge. Although the Hong Kong SAR government embraced several technology-and-innovation-boosting initiatives shortly after the handover from Great Britain to China in 1997, the city faces some economic headwinds. These include rapid economic development in nearby cities and regions

in Mainland China that have benefitted from the central Chinese government’s aggressive campaign not only to make China the world’s largest economy but more importantly to make it a leader in advanced technology, including information technology (IT). Global economic and market trends bode poorly for Hong Kong’s standing in the Asian and world economies.

Recently the Hong Kong Academy of Engineering Sciences (HKAES) and the Chinese Academy of Engineering (CAE) collaborated on a study of Hong Kong's current I&T capacity and issued a report assessing its current status and future prospects. Our goal was to assess what it would take to elevate Hong Kong's I&T performance and how it might best collaborate with Mainland partners – including Shenzhen and more broadly the entire Greater Bay Area – to transform its I&T capacity. We make several recommendations such that, if the Hong Kong government were to embrace them, would put the city in a stronger position to maintain economic growth and even to take a leadership role in the new economy while continuing to play a key role in China's continued economic ascendance. This brief outlines the main contours of the report.

Assessment

The research has five principle findings. First, as many have feared, Hong Kong is indeed in danger of losing its competitive edge to cities in the Greater Bay Area. Shenzhen in particular has become a leading center for I&T and new-economy business activity thanks largely to rapid progress in IT design and manufacturing.

Second, Hong Kong's failure to become an innovation center is now becoming a major challenge in both the regional and global competitive landscapes. Hong Kong's industries lag behind most of the city's economic peers worldwide in upgrading technologically and moving up the global value chain.

Third, in spite of these shortcomings, Hong Kong can leverage a major advantage to boost its I&T profile, namely its strong universities, which have become global leaders in many research areas, with rich potential for commercialization of innovative products and services. Indeed, Hong Kong can now boast of having five major universities ranked among the top one hundred worldwide, providing it with considerable potential for synergistic growth in partnership with Mainland institutions and industries.

Fourth, Hong Kong has steadfastly maintained a *laissez-faire* approach to economic governance, which has been described as 'positive non-interventionism'. This approach can no longer sustain economic growth and development.

Finally, Hong Kong's longstanding research model needs an overhaul. Public financial support for innovation-related research not only underfunds such research generally, it also fails to target research and development (R&D) collaborations and partnerships that are best suited to generating and commercializing growth-enhancing innovations.

Despite these shortcomings, we identified many success stories in Hong Kong, listing nearly forty brief case studies of successful ventures that have individually produced groundbreaking innovations, won international awards for achievements in innovation, successfully commercialized innovative products, featured renowned Hong Kong scientists and engineers, or applied innovations to benefit social well-being and human life more generally.

Recommendations

We highlight six major recommendations of the HKAES/CAE report aimed at boosting Hong Kong's I&T capacity.

First, the Hong Kong government can improve its decision-making process by incorporating more professional and technological expertise. There is a need for a cross-departmental mechanism to support integrated development of the I&T industrial infrastructure. Ideally, Hong Kong's chief executive would appoint a high-level advisory commission to map out an I&T strategy that would inform policymakers and enable them to work more constructively with such key stakeholders as the HKAES, the Academy of Sciences of Hong Kong, and the Federation of Hong Kong Industries. Such a commission should be led by individuals with professional managerial experience to harness input from others with R&D expertise in a variety of I&T-related applications.

Second, the government should encourage local companies that currently have little incentive to innovate or to develop more robust IT platforms to embrace innovative new-economy tools. For example, the government could offer funding support or tax exemptions to encourage pilot testing of new technologies to enable firms to upgrade their technology platforms. The government could also be more generous in sharing intellectual property developed through government projects.

Third, Hong Kong needs to foster a culture that values industrial innovation and high technology. The government could enhance such a culture by working with universities to develop a mechanism for fostering engagement with I&T-related research to inculcate in higher education institutions the understanding that applied research, knowledge transfer, and commercialization of innovative technologies help to define their societal mission. This might include enhancing reward mechanisms that encourage such activity.

Figure 1: Comparison of innovation performance indicators in selected economies

| | China | Shanghai | Shenzhen | Taiwan | HK | South Korea | Singapore | Switzerland | Sweden |
|---|-----------|----------|----------|--------|--------|-------------|-----------|-------------|--------|
| Land (1000 km ²) | 9,600 | 6 | 2 | 36 | 1 | 100 | 0.7 | 41 | 447 |
| Population (M) | 1,375 | 24.2 | 11.9 | 23.5 | 7.31 | 50.6 | 5.54 | 8.24 | 9.83 |
| GDP, (\$Billions) | 10,866.47 | 414 | 284 | 523.73 | 309.93 | 1,377.87 | 292.73 | 664.74 | 492.62 |
| GDP per Capita, \$ | 14,107 | 25,365 | 26,838 | 46,783 | 56,743 | 36,520 | 85,253 | 58,551 | 48,142 |
| Education, %GDP | 3.6 | / | / | 4.0 | 3.3 | 4.9 | 3.1 | 6.0 | 6.6 |
| R&D, %GDP | 2.09 | 3.73 | 2.85 | 3.00 | 0.74 | 4.23 | 2.20 | 2.97 | 3.28 |
| Innovation ranking (WEF) | 34 | / | / | 16 | 23 | 22 | 11 | 1 | 7 |
| High-Tech Exports, % | 25.75 | / | / | 38.62 | 10.71 | 26.84 | 49.28 | 26.84 | 14.26 |
| University in World's Top 200 (2016-17) | 6 | / | / | 3 | 5 | 7 | 2 | 7 | 5 |
| Total R&D Personnel (FTE thousands) | 3,758.9 | / | / | 245.9 | 27.4 | 442.0 | 42.5 | 75.5 | 84.5 |
| S&T doctoral/RPG* graduates | 32,331 | / | / | 2,478 | 1,627* | 4,945 | 4,338* | 1,787 | 1,716 |

Main source: IMD World Competitiveness Yearbook 2016 | WEF – World Economic Forum | *FTE – FULL time equivalent

Fourth, the government should do more to attract and retain Hong Kong-trained human capital with expertise and interest in pushing the innovation envelope. This might include forming more robust and widespread partnerships with secondary schools to encourage promising students to pursue innovation and advanced technology in college. Additional proactive government action could also look at scholarship/fellowship schemes that help students enroll in high-ranking universities overseas.

Fifth, Hong Kong can enhance its capacity to compete in the new economy by identifying promising strategic areas in which to facilitate collaboration for innovation with Greater Bay Area enterprises and institutions. The HKAES/CAE study recommends targeting several such areas, including advanced manufacturing, big data science and e-commerce, environmental and urban governance, energy conservation and new energy, medical and healthcare services, and new materials manufacturing.

The final recommendation also is about collaboration, but with Mainland I&T R&D efforts. For example, new opportunities for such collaboration are already being created through the development of the Hong Kong/Shenzhen Innovation and Technology Park in the Lok Ma Chau Loop. Designed to be developed into a hub of I&T R&D and innovation, the park opens abundant opportunities for Hong Kong universities, research institutes, industrial enterprises, and the government to adopt a fresh approach to collaboration. To nurture a robust collaborative spirit that fosters strong ties with Mainland stakeholders, the Hong Kong government should create a dedicated office with cross-departmental authority to facilitate a more flexible flow of cross-border resources, both material and human. The Loop park can only become a more effective source of I&T-led growth through such a concerted effort to foster Hong Kong – Mainland collaboration.

Reference

CAE-HKAES Report on the Integrative Development of Innovation and Technology in the Guangdong-Hong Kong-Macao Greater Bay Area. The Hong Kong Academy of Engineering Sciences, Chinese Academy of Engineering, and Institute for Public Policy, The Hong Kong University of Science and Technology. October 2017.

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We see encouraging signs that Hong Kong is stirring from its innovation slumber and preparing to embrace new-economy strategies and practices. The chief executive's 2017 Policy Address, for example, emphasizes a renewed I&T vision for the government, including proactive policies that dovetail with several of the HKAES/CAE study's recommendations. These encouraging initiatives include establishing a high-level I&T advisory group under the chief executive's leadership, support for technological innovation through tax concessions and direct government procurement, more robust support of human capital and I&T-related talents, and a doubling of R&D funding as a share of GDP from .074% to 1.5% within five years.

The Applied Science and Technology Research Institute (ASTRI), which was established in 2000 (in parallel with the Innovation and Technology Commission), has

turned its attention to applying I&T to Hong Kong's globally important financial sector. ASTRI is collaborating with the Hong Kong Monetary Authority (HKMA) at the HKMA-ASTRI FinTech Hub to develop new financial technology (FinTech). This includes ASTRI's Cyber Intelligence Sharing Platform, which is designed to help Hong Kong financial institutions collect, compile, and share data, intelligence, and information related to cyber threats. ASTRI is also pushing initiatives in the area of blockchain technology through which cybercurrencies are traded. These efforts are advancing the financial sector's FinTech capacity, which will enhance its global competitiveness.

Such developments are encouraging, but Hong Kong has a long way to go to become a new-economy powerhouse. It has the resources necessary to do so, but requires more active government leadership.



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