

Synergizing GBA - navigating roads towards an innovation and high-quality growth

February 2022







The Guangdong-Hong Kong-Macau Greater Bay Area (GBA) is leading China's rebound and development with great economic tenacity. By the end of 2020, the total gross domestic product (GDP) of the region reached RMB11,520.9 billion (US\$1,668.8 billion), accounting for 11.3% of the national GDP. And in the first nine months of 2021, core cities such as Guangzhou, achieved a GDP growth of 9.9%¹, ahead of the nation and Shenzhen also remained a steady recovery with 7.1% GDP growth². Hong Kong entered a phase of stable development with a GDP growth of 5.4%, while Macau kept its momentum with 32.9% GDP growth thanks to the reopening of the border since late last year³.

With many supportive policies in place, the GBA is expected to become the most open and economically vibrant region in the years to come, with both digitalization and sustainable development high on its agenda.

- ▶ The development of the digital government will accelerate and Shenzhen, a city of astounding growth and smart technologies, is expected to become the 'digital brain' that integrates data across all government agencies and businesses and power the country's smart city drive.
- ▶ Traditional financial service firms will be more digitalized thanks to the fast implementation of Blockchain and cities within GBA will work more closely on data security matters.
- ▶ Smart manufacturing will be a big bet for Guangdong and the construction of cross-field industrial Internet platforms will further transform the region toward a 'Smart Factory of the World'.
- ▶ Fast and scalable smart logistics will upgrade the supply chain, bring important assistance to local enterprises in reducing costs and increasing efficiency, thus winning the market in today's cutthroat E-commerce competition.
- ▶ Green instruments, including green bonds and green loans, are expected to better attract capital flows and foster the GBA's environmental-friendly investments; and listed companies within the region should also be ready to adopt a sustainability strategy and proactively communicate with their various stakeholders by using a globally recognized ESG reporting standards.
- ▶ Electric vehicles will continuously penetrate and there will be explosive growth opportunities expected in the charging facilities as well.

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1. Newsqd, https://www.newsqd.com/node_5c070fdd03/6931cba211.shtml
 2. Cnbayarea, http://www.cnbayarea.org.cn/english/News/content/post_626558.html
 3. The Statistics and Census Service of Macao, <https://www.dsec.gov.mo/zh-MO/Statistic?id=9>

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Overview of the Guangdong-Hong Kong-Macau Greater Bay Area

Rebounding steadily with great economic tenacity

The GBA comprises nine cities of Guangdong (namely Guangzhou, Shenzhen, Zhuhai, Foshan, Huizhou, Dongguan, Zhongshan, Jiangmen and Zhaoqing) and two Special Administrative Regions (SARs) of Hong Kong and Macau. The total area is around 56,098 square kilometers (sq km), with population of over 86 million⁴.

By the end of 2020, the total gross domestic product (GDP) of the GBA reached RMB11,520.9 billion (US\$1,668.8 billion), accounting for 11.3% of national GDP⁵. Shenzhen, Zhaoqing and Guangzhou were leading the recovery, with a 3.1%, 3% and 2.7% economic growth respectively⁶. The tertiary industry took a vital position in the economy structure, accounting for 66.2% of the total GDP. And export trade of the area reached US\$1,107.2 billion, mainly contributed by Hong Kong, Shenzhen and Dongguan⁷.

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4. Hong Kong Trade Development Council, <https://research.hktdc.com/en/article/MzYzMDE5NzQ5>
 5. Hong Kong Trade Development Council, <https://research.hktdc.com/en/article/MzYzMDE5NzQ5>
 6. Statistics Bureau of Shenzhen, http://tjj.sz.gov.cn/zwgk/zfxxgkml/tjsj/tjgb/content/post_8717370.html, Zhaoqing, http://www.zhaoqing.gov.cn/zqtjj/gkmlpt/content/2/2514/post_2514910.html#4472, and Guangzhou, http://tjj.gz.gov.cn/tjgb/qstjgb/content/post_7177236.html,
 7. Hong Kong Trade Development Council, <https://research.hktdc.com/en/article/MzYzMDE5NzQ5>

In 2021, the GBA has seen a steady and auspicious economic development, with core cities such as Guangzhou achieving 9.9% GDP growth in the first nine months, ahead of the nation, and Shenzhen also remained a sustained recovery with 7.1% GDP growth⁸. Hong Kong entered a phase of stable development with a GDP growth of 5.4%, while Macau kept its momentum with 32.9% GDP growth thanks to the reopening of the border since late last year⁹.

The swift post COVID-19 reopening of factories in the GBA showcased its reliability as a primary production base for companies keen to tap onshore China demand. And the capital investment into Guangdong financial high-tech zone reached RMB203.8 billion during the same period, generating a new development pillar of the GBA's economy¹⁰.

Major indicators of the GBA (2020)

	Area (sq km)	Population (million)	GDP (RMB billion)	GDP per capita (RMB thousand)
Dongguan	2,460.0	10.5	965.0	92.0
Foshan	3,798.0	9.5	1,081.6	114.0
Guangzhou	7,434.0	18.7	2,501.9	134.0
Hong Kong	1,110.0	7.5	2,410.4	298.0
Huizhou	11,347.0	6.1	422.2	70.0
Jiangmen	9,507.0	4.9	320.1	67.0
Macau	33.0	0.7	157.9	228.0
Shenzhen	1,997.0	17.6	2,767.0	158.0
Zhaoqing	14,891.0	4.1	231.2	56.0
Zhongshan	1,784.0	4.4	315.4	71.0
Zhuhai	1,736.0	2.4	348.2	143.0

Source: cnbayarea.org.cn, Hong Kong Trade Development Council

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- 8. Cnbayarea, http://www.cnbayarea.org.cn/english/News/content/post_626558.html
 - 9. The Statistics and Census Service of Macao, <https://www.dsec.gov.mo/zh-MO/Statistic?id=9>
 - 10. Statistic from Guangdong financial high-tech zone, https://www.thepaper.cn/newsDetail_forward_15328894

Growing into a world-class city cluster

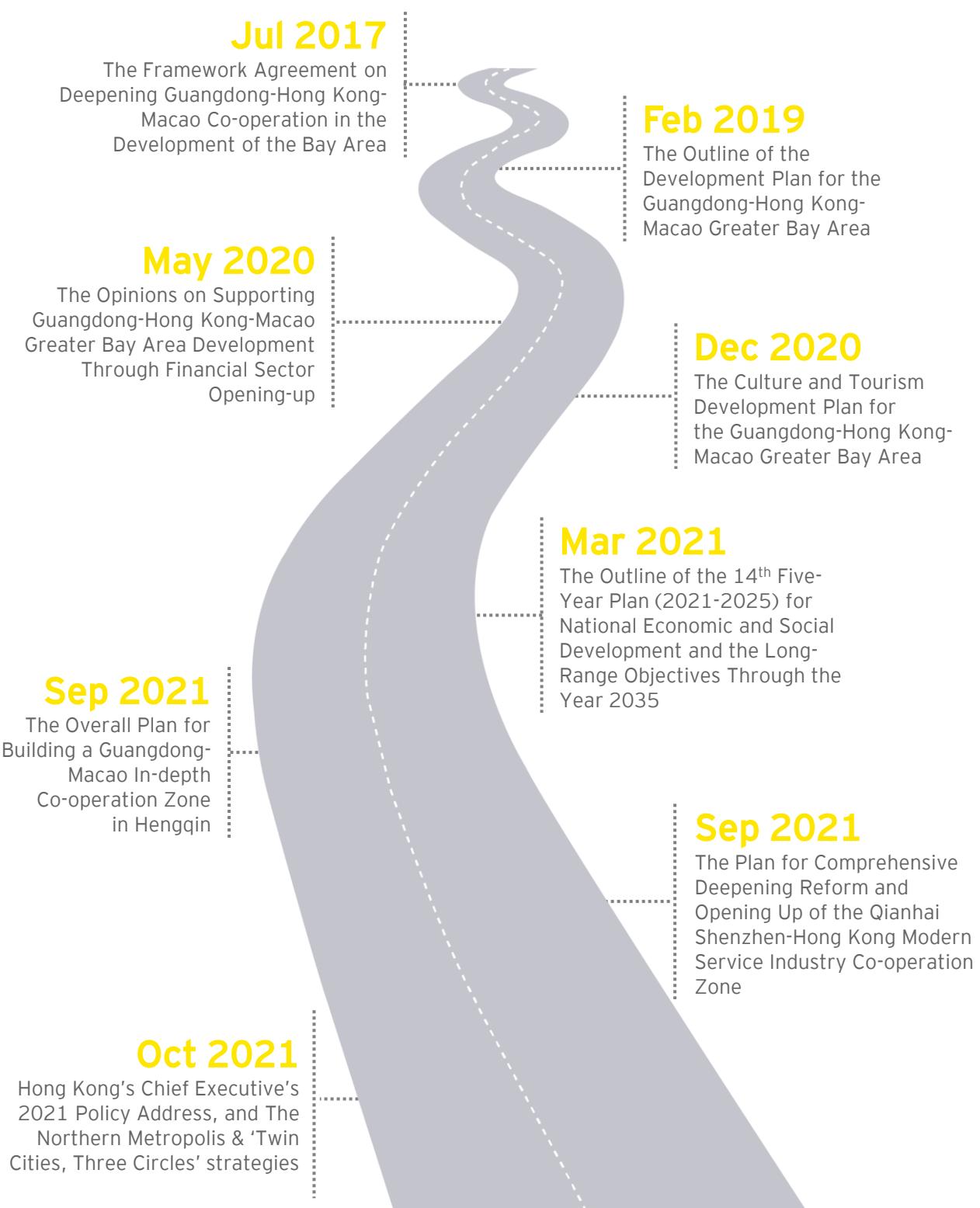
Starting from the signing of the Framework Agreement on Deepening Guangdong-Hong Kong-Macao Cooperation in the Development of the Greater Bay Area¹¹ in 2017, there have been constant policies from both national and regional level that support the integration and development of the GBA. By April 2021, employment, finance, innovation and technology were the top three issues in the overall 231 government files related to the construction of the area¹².

The development of the GBA is one of the national strategic plans and has great significance in the country's implementation of innovation-driven development and commitment to reform and opening-up. The objectives are to fully leverage the composite advantages of the three places, further deepen cooperation and integration amongst Guangdong, Hong Kong and Macau, and promote the construction of a global competitive industrial system, as well as an international center for technology and innovation. The GBA is expected to become a dynamic world-class city cluster and an ideal place for living, working, and travelling.

In early 2021, the development of the GBA was once again emphasized in the Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and the Long-Range Objectives Through the Year 2035¹³. Hong Kong also announced its Chief Executive's 2021 Policy Address to push further integration of Hong Kong into the national development¹⁴. Recently, two general plans were promulgated by the central government to spur the next stage of high-quality development of the GBA, underlining the strategic positioning of Hengqin in terms of promoting diverse economy in Macau, and highlighting Qianhai's importance in leveraging Hong Kong's advantages to strengthen the cooperation of the GBA.

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11. National Development and Reform Commission, https://www.bayarea.gov.hk/filemanager/en/share/pdf/Framework_Agreement.pdf
 12. National Development and Reform Commission, https://www.ndrc.gov.cn/xwdt/ztzl/ygad/wqjs1/202104/t20210425_1277387.html?code=&state=123
 13. The State Council of the People's Republic of China, http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm
 14. The Hong Kong Special Administrative Region of the People's Republic of China, <https://www.policyaddress.gov.hk/2021/eng/index.html>

Policy measures to further promote the development of the GBA



Source: cnbayarea.org.cn, Hong Kong Trade Development Council

Digitalization to achieve sustainable development goals in the long-term

GBA is raising as a powerhouse of digitalization

The GBA is actively consolidating its strengths and implementing digitalization across a range of sectors. By 2035, as laid out in the Outline of the Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area¹⁵, the nation targets to establish a technology-and-innovation-driven development model in the region, and further enhance its global competitiveness.

Guangdong digital economy takes lead in China: By the end of 2020, Guangdong's digital economy contributed 13.3% of the country's total, ranking the 1st out of 31 provinces, and its value-added reached RMB5.2 trillion, accounting for 46.8% of GDP with 6.6% YoY growth. Moreover, Guangdong aims to increase the number of 5G base stations from 134,000 to 250,000, covering 100 million users with digital economy of RMB10.7 trillion by 2025¹⁶, keeping the leading position of digital economy in the country. Recently, a regulation was released by Department of Industry and Information Technology of Guangdong, to further strengthen the communication and cooperation with Hong Kong and Macau in fields such as digital infrastructure, digital trade, and digital finance.

15. The State Council, The People's Republic of China, http://www.gov.cn/zhengce/2019-02/18/content_5366593.htm

16. Department of Industry and Information Technology of Guangdong, http://gdii.gd.gov.cn/mtbd1875/content/post_3498244.html

Digitalization drives new business model in Hong Kong: With growing technology capabilities, digital advances, and innovative breakthroughs, Hong Kong is accelerating the implementation of digital technology in several sectors. Particularly, some businesses are forced to speed up digitalization due to the disruption caused by COVID-19 pandemic, such as E-commerce. Offline stores are shifting their operation strategy to offer more online products and services; shopping malls are setting up E-commerce channels to support retailers to continue their business; traditional food and beverage (F&B) companies are becoming more proactive to reach out for consumers¹⁷. Hong Kong's start-up companies also target the GBA as an ideal innovation base, with dense network of suppliers, large skilled labor force, mature logistics infrastructure, as well as government incentives and fund support. Hong Kong's Dedicated Fund on Branding, Upgrading and Domestic Sales (BUD Fund) offers up to HK\$1,000,000 (US\$128,700) grants per project for new businesses to help them scale up in the Mainland China and Southeast Asia. Additionally, the projects under joint research and development between Guangzhou and Hong Kong will receive as much as RMB4.5 million (US\$640,000) funds support¹⁸.



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17. techwireasia.com, <https://techwireasia.com/2020/03/how-a-pandemic-is-igniting-hong-kongs-digital-economy/>
 18. CGTN, <https://news.cgtn.com/news/2021-03-08/Hong-Kong-startups-tap-into-Greater-Bay-Area-s-digital-innovation--YtOodZbSOQ/index.html>

Powering digital transformation in key industries

The digital transformation will drive growth and provide new business opportunities for many sectors in the years to come (and not limited to the ones discussed below). By leveraging the technological R&D and industrial innovation capabilities of Guangdong, Hong Kong and Macau, the region is expected to become a technological innovation incubator for emerging technologies, industries, and businesses globally.

1. New technology powering digital government and smart city

- ▶ **Guangdong to phase in CDOs (chief data officers) to accelerate digitalization**

On 14 May 2021, the Guangdong municipal government released the Notice on the Pilot Work Plan for Chief Data Officer System, deciding to explore and pilot the CDO system in six provincial bureaus and 10 cities¹⁹. By far, five cities, including Guangzhou, Shenzhen, Zhuhai, Maoming, and Heyuan, have disclosed their implementation plans for piloting the CDO system.

Take Shenzhen as an example, on 9 August 2021, the government released the Pilot Implementation Plan²⁰ which further clarified the CDO's responsibility to include:

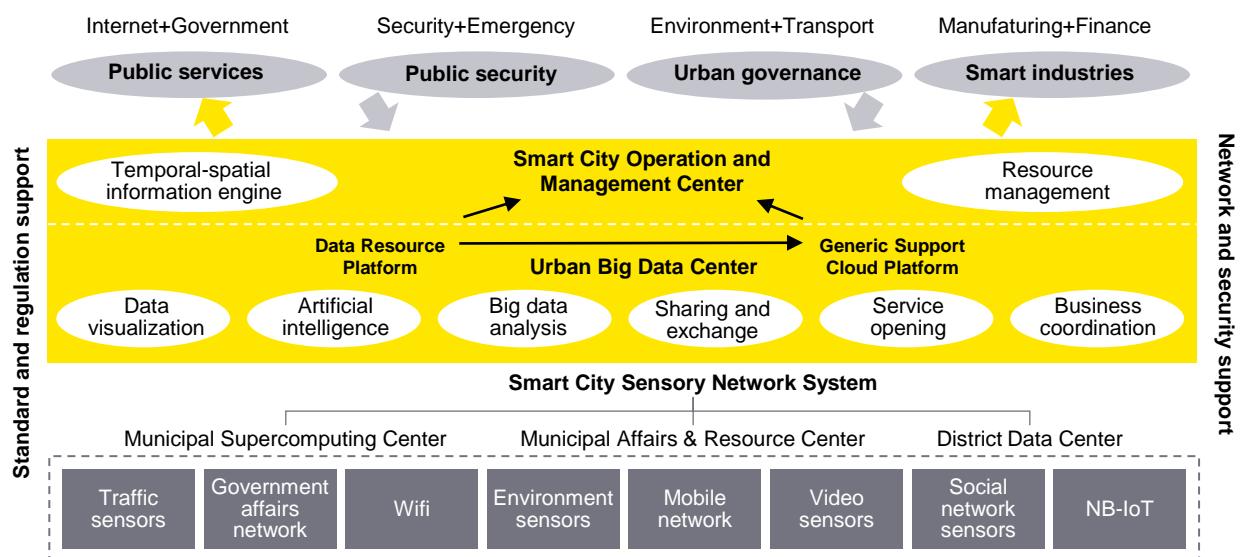
- ▶ Promoting the development of smart cities and digital governments.
- ▶ Improving standardized data management - promoting the implementation of the Shenzhen Data Regulation and the establishment of data rules, such as data classification and data trading.
- ▶ Promoting the innovative application of data convergence - promoting data sharing, openness, development, and utilization and promoting in-depth integration of public data with social data and the innovation in data application scenarios.
- ▶ Guiding and supervising data management work.
- ▶ Providing data management and security training to the team.
- ▶ Exploring the application of data with different focuses - Futian District of Shenzhen will focus on utilizing public data resources to support Shenzhen-Hong Kong technology innovation cooperation; Nanshan District will focus on improving data security supervision and warning capability; Bao'an District will focus on utilizing data in social governance; and Pingshan District will promote the experience of Chief Information Officer (CIO) and Chief Privacy Officer (CPO).

19. Guangdong government, http://www.gd.gov.cn/xxts/content/post_3282209.html

20. Shenzhen government, http://www.sz.gov.cn/szzsj/gkmlpt/content/9/9049/post_9049862.html#19244

- ▶ How this will impact and transform the government sector?
- ▶ **Digital government:** Shenzhen has been the pioneer in the area of digital government and it has made great progress on data utilization and sharing. The Shenzhen Municipal Government Data Open Platform provides a large number of public data interfaces (a total of 2,425 data interfaces, which includes 1,242 city-level data interfaces and 1,183 district-level data interfaces²¹), however, the "information island" situation still exists in government units. The introduction of a senior position like the CDO will further gauge the data flow between different government units or utility companies and avoid data duplication (which usually means duplicate investment in IT systems) and push more high-level coordination and universal strategy.
- ▶ **Smart city:** According to the Foresight Industry Research Institute, China's smart city market will be worth RMB25 trillion by 2022²². Shenzhen, a city of astounding growth and smart technologies, is equipping itself with a "digital brain" and a "central nervous system" that integrates data across all government agencies and businesses and powering the country's smart city drive.

Shenzhen's smart city structure



Source: Government site of Shenzhen, EY analysis

21. China Briefing, <https://www.china-briefing.com/news/guangdong-pilot-program-on-chief-data-officer-accelerating-digitalization-and-achieving-better-data-protection/>

22. Foresight Industry Research Institute, <https://www.o-city.com/blog/building-a-smart-city-from-scratch-shenzhen-story>

- ▶ **Creating an intelligent and comprehensive transportation system:** At the heart of every smart city initiative is the need to become more efficient. Empowered by digital transformation, Shenzhen's airport now provides scenario-specific solutions for operations control, security, and services. From check-in to boarding, passengers need to present their passports only once. It also uses AI platforms to collect, analyze, and measure massive amounts of data, increasing the ratio of on-time departures of flights to 88%. With intelligent gate assignment powered by algorithms, 4 million fewer passengers per year have to take a shuttle bus to board a flight, guaranteeing a better travel experience²³.
- ▶ **Smart lighting to accelerate the digital ecosystem:** While street lighting is only one aspect of the total smart city ecosystem, it is expected to grow to RMB59 billion by 2025, according to ING²⁴. Most of the investment will be via public-private partnerships with local governments and the speed of Guangzhou, Shenzhen will be faster than the national average. In addition to basic lighting, it could also include surveillance cameras, auto-police calling when the data shows abnormalities, traffic management, weather information collection, signal senders and others. The collected data can help governments and companies save billions of dollars every year and be used to manage industries and identify which sectors to focus on and allocate resources to where they are most needed.



23. https://m.thepaper.cn/baijiahao_11525515

24. ING report, Covid-19 unlocks the potential of smart cities in China, <https://think.ing.com/articles/covid-19-unlocks-the-potential-of-smart-cities-in-china/>

2. FinTech fueling financial cooperation breakthroughs in GBA

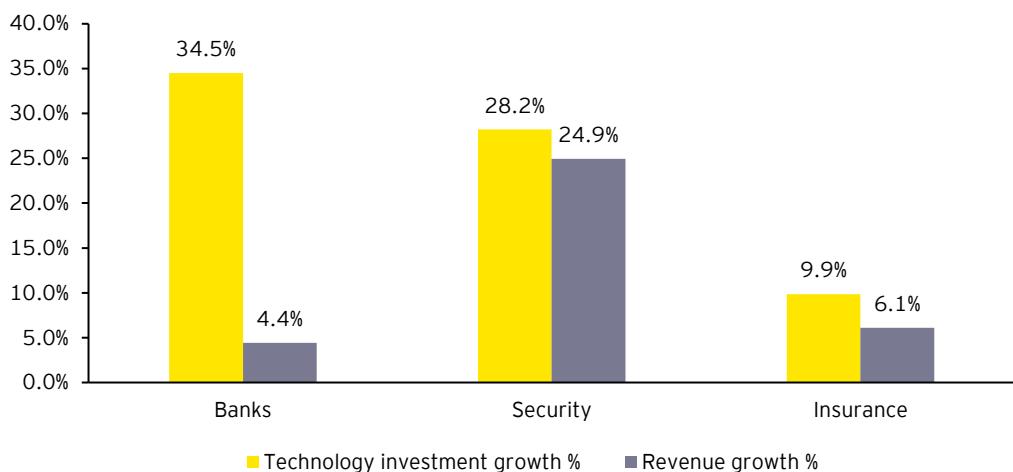
► Guangdong is at the forefront of FinTech in China

Over the past few years, China has taken a leading role in digital payment across the globe. QR codes, where users can simply open smartphone apps to scan and make a payment, have had a huge influence on people's lifestyles. According to the China Internet Network Information Center (CNNIC), by June 2021, China had almost 872 million e-payment users²⁵, and the total number of e-payment transactions reached 62.2 billion, with an amount of RMB722.3 trillion²⁶. Thanks to the rapid and ongoing E-commerce growth, Guangdong is now at the forefront of various types of FinTech businesses. In the first seven months of 2021, the province saw a record of 24.7 billion e-payment transactions, with the total amount of RMB58 trillion²⁷.

► How are traditional financial services firms engaging with FinTech?

Leading commercial banks in China are boosting Fitech spending to improve their customer experience and achieve higher revenue. Big Data and AI are the core technologies they're utilized now. 1) Big Data makes it easier for people to apply for a loan and it allows people to pay more easily by installments based on their financial status. It considers the spending and cash inflow habits of a user when evaluating their credit score. 2) AI can help traditional financial institutions further improve customer service, by applying a natural language processing technique.

Technology becomes an investment priority for tradition financial institutions in 2020



Source: The China Academy of Information and Communications Technology (CAICT)

25. The 48th Statistical Report on China's Internet Development, http://www.cnnic.cn/hlwtzyj/hlwxbg/hlwtjbg/202109/t20210915_71543.htm

26. The People's Bank of China, <http://www.pbc.gov.cn/zhibujiesuansi/128525/128545/128643/4333577/index.html>

27. https://finance.sina.com.cn/money/bank/bank_hydt/2021-07-26/doc-ikqciyzk7779568.shtml

► **Accelerating financial innovation to boost cross-border product and service**

Recently, Guangdong released a new action plan to optimize the implementation of FinTech, particularly in the cross-border payment and asset management fields²⁸.

► **Blockchain supports cross-border payments:**

Traditional cross-border payment has many shortcomings, such as cumbersome, time-consuming, labor-intensive processes, unsafe transaction, high service fee and low efficiency, etc. While in GBA, there are three currencies involved in the financial market, which also brings extra pressure for the payment system. As one of the key FinTechs, blockchain has characteristics of disintermediation, peer-to-peer transaction and tamper-proof. It supports the direct interaction among cross-border payment users and realizes real-time settlement. By the end of 2020, Guangdong owned nearly 100 blockchain enterprises and 7 blockchain industrial parks²⁹. With the help of blockchain, the GBA is expected to realize efficient, safe and stable cross-border payment.

► **Cross-border asset management is the next focus:**

The establishment of a cross-border asset management pilot program is on the way in GBA. According to the new action plan, financial institutions from Hong Kong and Macau are encouraged to set up joint venture asset management companies with local major banks, and foreign financial institutions are also welcomed to expand their cross-border security, fund, futures and insurance business within the area. Targeting the specific asset management demands of individual investors in GBA, financial institutions are also preparing themselves to offer more customized products and services. In October 2021, 40 banks in Guangzhou and Shenzhen were selected as cross-border asset management pilot banks by the National Development and Reform Commission (NDRC)³⁰.

28. The government site of Guangdong, https://www.gd.gov.cn/zwgk/wjk/qbj/yfh/content/post_3518060.html

29. <https://www.163.com/dy/article/GHKKVEBH05198086.html>

30. National Development and Reform Commission, https://www.ndrc.gov.cn/xwdt/tztl/ygadwqjs1/202111/t20211111_1303719.html?code=&state=123

► **Hong Kong: A silent revolution is underway in the e-payment field**

Compared to the mainland cities, Hong Kong is relatively traditional in terms of the local payment system, even though it has made a lot efforts for the adoption of e-payment since the Hong Kong Monetary Authority (HKMA) issued Stored Value Facilities (SVF) licenses in 2016. Until now, there are 18 financial institutions granted with SVF licenses.

Due to the impact of COVID-19, consumers in Hong Kong are becoming more digitally savvy and shifting their payment behavior. According to GlobalData, E-commerce in Hong Kong is also expected to grow at a compound annual growth rate (CAGR) of 8.3% from HK\$178.0 billion (US\$22.9 billion) in 2021 to HK\$226.0 billion (US\$29.0 billion) in 2024³¹. This emerging trend will undoubtedly support the e-payment market growth further and bring new opportunities for financial institutions and FinTech companies to explore offering services in this underserved area.

► **Building a better business environment for FinTech**

To fully leverage Hong Kong's diverse and resilient financial resources and maintain the strong momentum of FinTech development, Hong Kong government proactively offers multiple grants, from R&D support, tax deductions, waived fees and fundraising to offering funds for even overseas expansion. From the recent "Fintech 2025" strategy unveiled by the HKMA, we understand that there will be a Tech Baseline Assessment introduced to all banks in Hong Kong to fully adopt FinTech from the front to the back end³². To keep the same pace with the national development and GBA partners in digital currency fields, HKMA will begin a study on e-Hong Kong dollar to understand its potential uses, benefits and risks. Additionally, it's expected to see the construction of a large scale of data infrastructures in Hong Kong, including commercial data interchange, digital corporate identity, and DLT-based credit data-sharing platform, etc. HKMA also intends to strengthen Hong Kong's advantage in FinTech and financial professional talent, by offering FinTech-specific training programs and qualifications³³.

31. Hong Kong's e-commerce growth will continue beyond COVID-19 pandemic,
<https://www.globaldata.com/hong-kongs-e-commerce-growth-will-continue-beyond-covid-19-pandemic-says-globaldata/>

32. Hong Kong Monetary Authority (HKMA), <https://www.hkma.gov.hk/eng/news-and-media/press-releases/2021/06/20210608-4/>

33. Hong Kong Monetary Authority (HKMA), <https://www.hkma.gov.hk/eng/news-and-media/press-releases/2021/06/20210608-4/>

► **MOU signed to boost FinTech regulation and growth in GBA**

In October 2021, the People's Bank of China (PBC) and HKMA jointly announced the Memorandum of Understanding (MOU) on Fintech Innovation Supervisory Cooperation in the Guangdong-Hong Kong-Macao Greater Bay Area³⁴. It marks the close connection between PBC's Fintech Innovation Regulatory Facility with HKMA's Fintech Supervisory Sandbox. The move aims to advance cooperation on FinTech innovation on the basis of law and regulations, improve the quality and efficiency of financial services in the GBA and increase financial support for its development. Particularly, the GBA can leverage Hong Kong's advantages as an international financial hub and a bridge that connect Mainland China with the international financial market, to initiate a new stage of cooperation in the following fields, including:

- ▶ **Regulation and standard system:** with Hong Kong's compliance and supervision experience in financial fields, forming a better understanding of the regulations and standards of the international financial market, further promoting financial collaboration at an institutional level in GBA.
- ▶ **Capital and customer resource:** expanding cooperation opportunities with international capitals, fully utilizing Hong Kong's geographic and connectivity advantages to go beyond GBA and Asia, and to head to the international financial market, providing innovative products and services for a larger scale of customers.
- ▶ **Talent pool:** imitating the talents training and management programs of Hong Kong to expand the talent pool of the GBA, stimulating more employment opportunities for FinTech specialists, and accelerating the talent exchange and cooperation in GBA.

34. The State Council, The People's Republic of China, http://www.gov.cn/xinwen/2021-10/21/content_5644115.htm

3. Navigating the road toward a smart manufacturing hub

► Guangdong: accelerating digital transformation and shifting to the "Smart Factory of the World"

Being China's manufacturing heartland, Guangdong is home to nearly 3 million industrial companies and is now accelerating the digital transformation and exploring paths for the upgrading of its manufacturing industry. In Guangdong, a total of 15,000 companies have achieved digital transformation and 500,000 companies have gained access to cloud services, according to the province's department of industry and information technology³⁵.

The smart manufacturing nerve centres

Guangzhou

- ▶ Solid R&D and manufacturing foundation
- ▶ Strong capability in resources aggregation
- ▶ Guangdong's leader in smart manufacturing processes for more high-tech industries, such as automotive and healthcare

Dongguan

- ▶ Developed manufacturing hub with huge potential for AI integration
- ▶ World's factory for electrical products and high-tech items

Foshan

- ▶ Home to the Guangdong Intelligent Manufacturing Demonstration Park
- ▶ Catering mostly for the industrialization of smart home appliances and smart living applications

Source: EY Analysis

In July this year, Guangdong further issued the “Implementation Plan for the Digital Transformation of Manufacturing in Guangdong Province (2021-2025)” and “Made in Guangdong Province” plan³⁶. The plan proposes that by 2025, Guangdong will promote more than 50,000 industrial enterprises above designated size to implement digital transformation using a new generation of information technology, and drive 1 million enterprises to “go to the cloud” and “use the cloud” to reduce costs and improve quality and efficiency.

35. Xinhua news, http://www.xinhuanet.com/english/2021-04/05/c_139859765.htm

36. Government of Guangdong, http://gdii.gd.gov.cn/gkmlpt/content/3/3339/post_3339655.html#906

Through the “Guangdong Strong Core” project, the province will further develop intelligent hardware and equipment, and promote the application of independent controllable industrial-grade chips. It also vows to accelerate the construction of smart workshops and smart factories and the construction of cross-field industrial Internet platforms. In terms of the AI-augmented manufacturing, the province will move beyond the current manufacturing paradigm and catalyze a new one, AI-driven industrialization to optimize a variety of manufacturing processes.

In promoting the research and application of industrial software, Guangdong will implement the “Soul Casting Project”, vigorously develop industrial software and basic software, and support industry leading enterprises, industrial software companies, manufacturing digital transformation service providers and colleges to strengthen collaboration, and build key research bases in Guangzhou, Shenzhen, Foshan, Dongguan and other places.

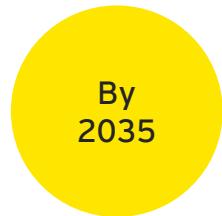
► **Creating synergies within the GBA**

In March, Guangdong released the implementation plan for Guangzhou-Hong Kong Smart Manufacturing Cooperation Zone. Covering a total area of 56.4 square kilometers, the zone will be divided into three sections of smart manufacturing, scientific & technological innovation and livable community, and will deepen industrial cooperation between Guangzhou Development District and Hong Kong.

Development objectives of Guangzhou-Hong Kong Smart Manufacturing Cooperation Zone Implementation Plan³⁷



The zone's smart manufacturing will accelerate joint development with Hong Kong's advanced industries such as industrial design, shipping and logistics as well as financial services. A number of demonstration projects and cross-border service platforms for smart manufacturing will be launched.



The zone will establish rules in line with Hong Kong and international standards. The overall level of smart manufacturing industries will lead worldwide, helping the Greater Bay Area to participate in global competition and cooperation.

Source: Government of Guangzhou, EY analysis

37. Government of Guangzhou, http://www.gz.gov.cn/guangzhouinternational/government/majorprojects/content/post_7188999.html

To further speed up the digitalization, the member cities in the GBA should gather policy makers, think-tank scholars, technology experts and entrepreneurs to jointly explore cooperation opportunities to boost manufacturing development through innovation and technology, and there should be more visible and usable digital services for small and micro-sized enterprises.

- ▶ Technological innovation: Working together to achieve a larger scale of industrial development, particularly in the advanced manufacturing fields and other converged new industries.
- ▶ Collaboration between different segments along the industrial value chain: New technology regarding production and management interacts with traditional industries, resulting in higher value-added products.

4. Smart logistics will shape the success of the future of retail

► Digital-savvy consumers influenced by delivery

In today's world of cutthroat E-commerce competition, fast and scalable logistics is not just a nice-to-have but is now at the core of running a successful digital business. Being in the middle of a pandemic while living in a fast-paced city like Hong Kong, customers have rising expectations for the ease and speed of their shopping journey. According to Pickupp's data, there has been a 39.7% increase in same-day delivery demand since the pandemic³⁸.

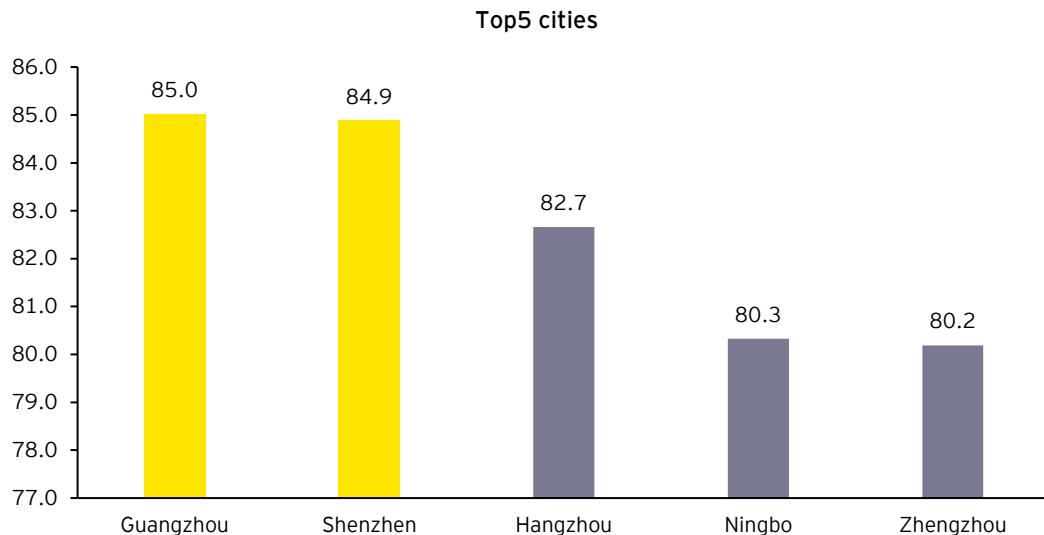
It's found that late delivery is the number one reason for consumer complaints last year, and a timely, transparent and efficient logistics process is utterly critical for all digital businesses from first to last-mile. More than half of the local e-shops see logistics as their most impacted area due to the pandemic, citing challenges from supply chain disruptions to delays in front-end deliveries to consumers. The interruptions in their logistics and supply chains - including reduced transportation and manpower capacities - as well as hurdles in delivery timeliness, have resulted in sales dropping by more than 20%, cited by over a quarter of local e-tailers.

38. Pickupp, <https://hk.pickupp.io/en/blog/press-release-delivery-in-2021-three-trends-to-reshape-our-business>
<https://hk.pickupp.io/en/blog/the-future-of-retail-relies-on-smart-logistics>

► Accelerating smart logistics to support the booming demand

The GBA has become China's E-commerce industrial base. Market data show China has more than 3.8 million E-commerce-related companies, of which nearly 20% are located in Guangdong, more than any other province in the country. Guangdong is also home to 68% of the 570,000 cross-border E-commerce-related companies in China, reflecting the geographical and policy advantages of the GBA in cross-border E-commerce³⁹. The COVID-19 pandemic has dealt a heavy blow to a wide range of industries. But the cross-border E-commerce industry has been growing exceptionally well because more and more retail customers are shifting to online consumption. As the global economy gradually recovers, global trade will see a sharp rebound, which will benefit cross-border E-commerce enterprises and stimulate economic activities in the GBA, while enhancing connections between the area and other regions.

GBA cities (Guangzhou and Shenzhen) ranked first two in the overall index of development of cross-border E-commerce on the mainland in 2020⁴⁰

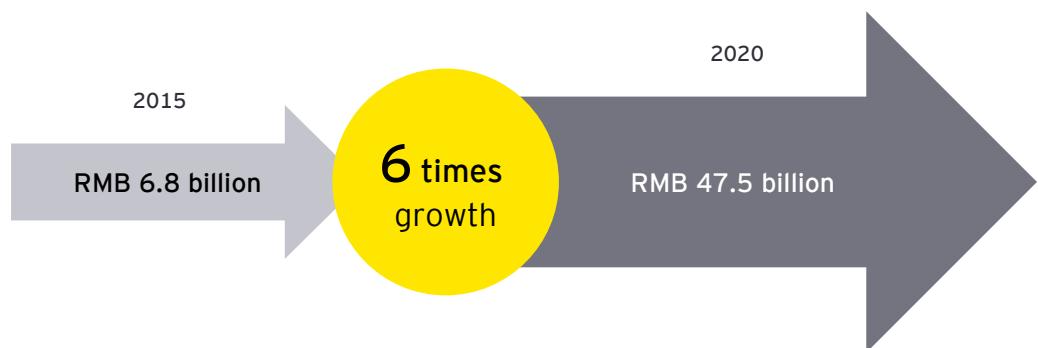


Source: Guangzhou Municipal Commerce Bureau

39. China Daily, <https://global.chinadaily.com.cn/a/202104/02/WS60665d48a31024ad0bab3299.html>

40. Guangzhou Municipal Commerce Bureau, http://sw.gz.gov.cn/swzx/dwmy/content/post_6553134.html

Cross-border E-commerce in Guangzhou increased by six times during 2015-2020



Source: Government of Guangzhou

Dongguan to boost clustering effect in GBA: As a “world factory” that radiates Guangdong, Hong Kong and Macau, Dongguan is one of the strategic cities that all logistic companies are accelerating their investment. AloT and 5G logistic park are the big bets to accelerate the smart logistics industry, upgrade industrial informatization, and boost the cluster effect of the supply chain in GBA.

Zhuhai will work towards a service-oriented logistics hub: the government released the Implementation Opinions on Accelerating the Development of Modern Logistics Industry in March 2020⁴¹. In the next five years, the city will strongly promote its logistics industry with its port, airport, and railway network. It will increase land devoted to the logistics industry and propel the smart logistics sector by accelerating construction of logistics parks and encouraging enterprises to build logistics facilities on old factory sites or other idle land resources.

Hong Kong to better consolidate its strengths in the global logistics supply chain: Hong Kong is a premier logistics hub and springboard to and from the Mainland, thanks to its strategic location, world-class infrastructure and multi-modal transportation links. In recent years, it has strived to develop high value-added maritime services and smart logistics. In future, Hong Kong should also adopt advanced digital technologies to support the development of its shipping industry. Examples include the application of smart port technology, the demonstration project for the research, development and application of smart waterways in Guangdong, Hong Kong and Macau, the application of the BeiDou Navigation Satellite System, and the integrated application of internet-of-things and other technologies in shipping. This way Hong Kong can better consolidate its strengths in the global logistics supply chain.

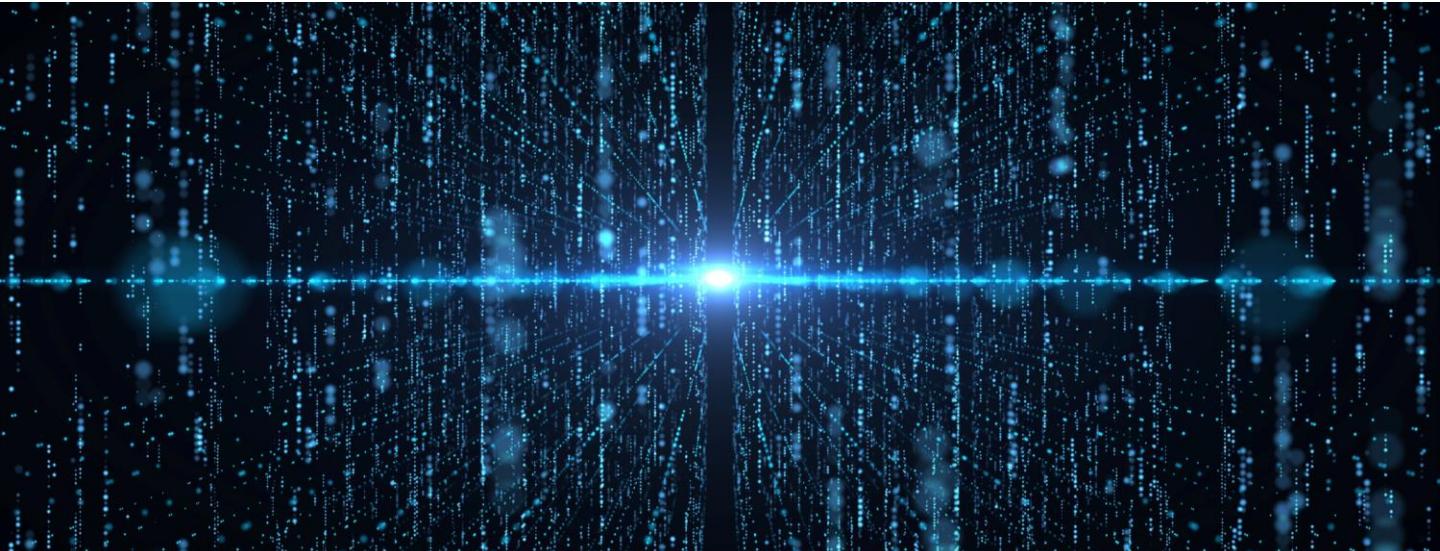
41. Government of Zhuhai, http://www.cnbayarea.org.cn/english/News/content/post_255114.html.

Expanding green efforts for sustainable development in the region

► Decarbonization at the top of the agenda:

With China approaching a carbon emission peak by 2030 and committing to achieving carbon neutrality by 2060, a relatively developed region like GBA, is expected to undertake even greater responsibility for decarbonization.

As early as 2010, Guangdong was assigned as one of the 13 low-carbon pilot zones by the NDRC to explore the pathway of low-carbon development⁴². Soon afterward, Guangdong's carbon emissions trading scheme (ETS) pilot was officially launched at the end of 2013⁴³. By 2020, Guangdong ETS has gradually included about 250 emission control enterprises in the six major industries of steel, petrochemical, electric power, cement, aviation and papermaking, covering about 70% of the province's energy carbon emissions⁴⁴. By July 2021, the cumulative trading volume of carbon emission in Guangdong reached 196 million tons, with a cumulative turnover of RMB4.5 billion, both ranking the 1st in China⁴⁵. As a more developed region, Hong Kong already reached a carbon emission peak by 2014, and its per capita carbon emissions have reduced from the peak level of 6.2 metric tons in 2014 to about 4.5 metric tons in 2020⁴⁶.

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42. The national Development and Reform Commission, https://www.ndrc.gov.cn/xxgk/zcfb/tz/201008/t20100810_964674.html?code=&state=123
 43. Guangdong Provincial Development and Reform Commission, http://drc.gd.gov.cn/qtwj/content/post_864931.html
 44. Department of Ecology and Environment of Guangdong, http://gdee.gd.gov.cn/guangzhou3072/content/post_3177274.html
 45. Department of Ecology and Environment of Guangdong, http://gdee.gd.gov.cn/tpxw3067/content/post_3524481.html
 46. The Government of the Hong Kong Special Administrative Region, <https://www.info.gov.hk/gia/general/202110/08/P2021100800588.htm>

► **Big bets on carbon neutrality initiative**

Guangdong proposed in its Outline of 14th Five-Year Plan for Economic and Social Development and the Long-Range Objectives Through the Year 2035, it will achieve carbon emissions peak and carbon neutrality ahead of the national target. In early 2021, the establishment of the Guangzhou Futures Exchange was approved, as the fifth futures exchange center in China, it's expected to make carbon emissions allowance futures as its first trading item⁴⁷. At the same time, Guangdong is preparing to introduce more carbon financial products, attract more financial institutions, social capitals and investors to jointly boost the carbon emissions futures market based on laws and regulations⁴⁸.

Hong Kong pledged to achieve carbon neutrality before 2050. The Climate Action Plan 2050 of Hong Kong was announced in October 2021; it highlighted the decarbonization of this region will focus on four major strategies, namely net-zero electricity generation, energy-saving and green buildings, green transport and waste reduction⁴⁹. Additionally, a Carbon Market Work Stream (CMWS) was established by Securities and Futures Commission (SFC) and the Stock Exchange of Hong Kong in July 2021, it aims to explore opportunities presented by different carbon market models, form a strategic alliance with Mainland China carbon market, leverage national support, resources, mutual knowledge, and share experience to strengthen the decarbonization collaboration in the GBA⁵⁰.

1. Green finance will take a lead

► **Joint efforts to accelerate the green finance solutions**

In September 2020, a new finance alliance established to increase funding channels for green projects and give market-based advice to guide government green finance policies and green investment projects was launched in the GBA. This Greater Bay Area Green Finance Alliance (GBA-GFA) is a collaboration between the Hong Kong Green Finance Association (HKGFA), the Green Finance Committee of Guangdong Society for Finance and Banking (GDGFC), the Green Finance Committee of Financial Society of Shenzhen Special Economic Zone (SZGFC), and the Macao Association of Banks⁵¹.

47. <https://www.globaltimes.cn/page/202101/1213997.shtml>

48. National Energy Administration, http://www.nea.gov.cn/2021-08/06/c_1310111978.htm

49. The Government of the Hong Kong Special Administrative Region, <https://www.info.gov.hk/gia/general/202110/08/P2021100800588.htm>

50. Green finance hub in sight, China Daily, <https://www.chinadaily.com.cn/a/202110/09/WS6161312fa310cdd39bc6dd2f.html>

51. Hong Kong Green Finance Association, <https://www.hkgreenfinance.org/greater-bay-area-green-finance-alliance-officially-launched-today/>

In 2021, the GBA-GFA has made significant achievements in promoting green and sustainable finance and deeper cross-city collaboration. For instance, Hong Kong extended its Block-Chain Solar and Green Buildings efforts, with a new project, the GBA Deep Decarbonization Pathway, and Transition Financing Opportunities research, which has identified additional areas with the greatest potential of using transition financing to help different industries leapfrog to a low carbon economy.

Looking ahead, the GBA-GFA can play a greater role in the integration of Guangdong's industrial advantages, Shenzhen's technological innovations, and Hong Kong and Macau's open financial markets. An effective integration will create a positive cycle in the GBA where green finance supports green technology and green technology further promotes the green development of green industries.

Leveraging the advantages of three core cities⁵²

Guangzhou to accelerate the financial reforms pilot zone

- ▶ Guangzhou is leading the green finance market in policy support, mechanism upgrade, infrastructure construction, talent pool, and carbon financial reform in the GBA.
- ▶ Guangzhou's green finance reform pilots will be the best practices to help improve the cooperation in the GBA, and radiate the development of green finance in the nation.

Shenzhen to boost the financial vigor

- ▶ China's first green finance regulation came into effect on March 1, 2021 in Shenzhen. It provides a guarantee for Shenzhen to establish a financial ecological environment under the rule of law more conducive to the innovation of a green financial market.
- ▶ In November 2021, Qianhai issued the first special policy designed to boost financial cooperation between Shenzhen and Hong Kong, such as a RMB2 million reward for major financial cooperation platforms and basic financial infrastructure in the GBA. There is also a RMB3 million aid plan for fintech subsidiaries set up by Hong Kong virtual banks in Qianhai.

Hong Kong to be the green finance regional hub

- ▶ In 2020, SFC and HKMA initiated the establishment of the Green and Sustainable Finance Cross-Agency Steering Group to accelerate the growth of green and sustainable finance in Hong Kong.
- ▶ In December 2020, the Stock Exchange of Hong Kong launched the Sustainable & Green Exchange (STAGE), Asia's first multi-asset sustainable investment product platform, to provide information, access and transparency on a wide range of sustainable, green and social investment products.
- ▶ With a sound legal and regulatory system, deep and liquid capital markets, a robust financial infrastructure and a wealth of financial intermediaries and talent. Hong Kong will continue to facilitate and support Mainland China's enterprises in raising funds for green projects in the region; make full use of Hong Kong's capital markets as well as financial and professional services for green and sustainable investment, financing and certification.

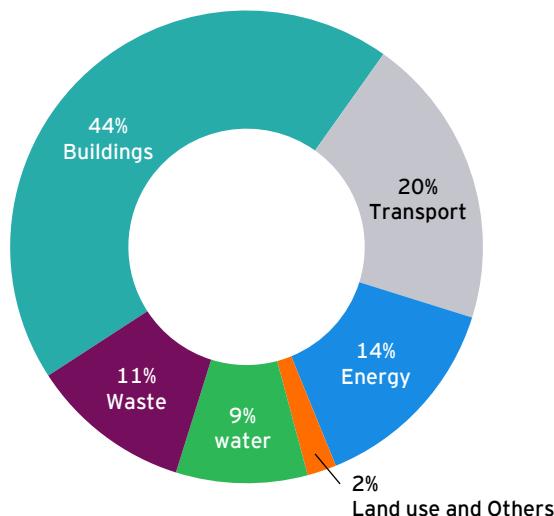
Source: News.gov.hk, the Stock Exchange of Hong Kong (HKEX), EY analysis

52. Shenzhen's Qianhai issues guideline for financial cooperation with HKSAR, <https://www.globaltimes.cn/page/202111/1239652.shtml>

► **Green bonds to promote sustainable infrastructure development**

According to the CBI, green bonds from the GBA-domiciled issuers between 2016 and 2020 reached US\$16.9 billion, with a compound annual growth rate (CAGR) of 69%⁵³. In 2020, a total of US\$3.1 billion green bonds were issued in the GBA and Guangdong took US\$603 million of it. Buildings were the dominant theme of the GBA green bonds, accounting for 44% of the total volume, followed by the Transport (20%) and Energy (14%) sectors⁵⁴.

Green infrastructures take a large share of green bond allocation in the GBA



Source: Climate Bonds Initiative (CBI) & China Central Depository & Clearing Co. Ltd Research Centre (CCDC Research)

In the next few years, the green infrastructure planning and spending in the GBA region will continue to be ambitious. Guangdong is expected to see an RMB1.9 trillion (US\$299 billion) green investment in sectors such as wind power, ecological civilization construction for the next five years, and Hong Kong will spend US\$12.9 billion every year in infrastructure as well⁵⁵. To meet the growing demand, new channels will be necessary to mobilize private capital, as an additional finance option to the current Public-Private Partnership model. Green instruments, including green bonds and green loans, are expected to better attract capital flows and foster environmentally-friendly investments.

53. Green Infrastructure Investment Opportunities, https://www.climatebonds.net/files/reports/cbi_gba_glio_02c.pdf

54. Hong Kong Green Bond Market Briefing 2020, https://www.hkgreenfinance.org/wp-content/uploads/2021/05/CBI_HK-Green-Bond-Market-Briefing-2020-1.pdf

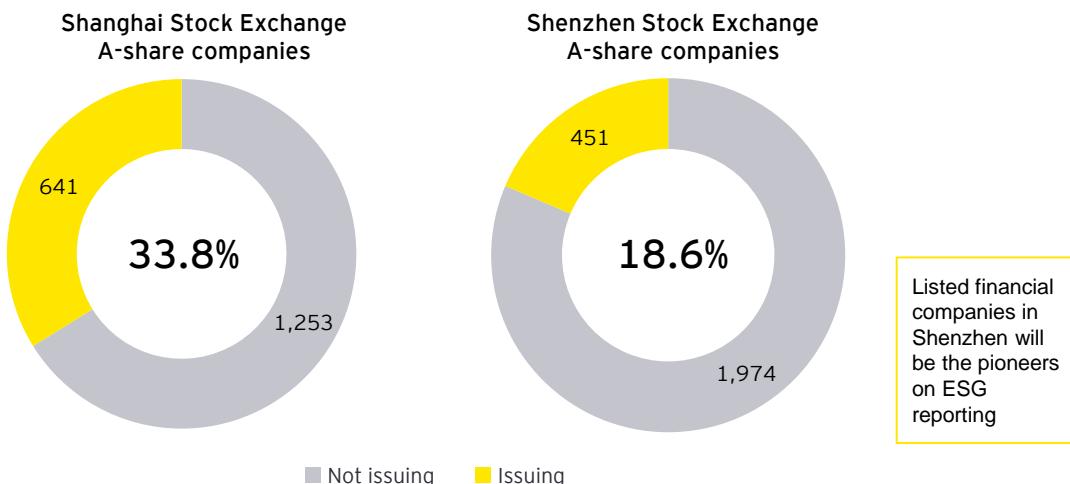
55. The GBA green infrastructure investment opportunities 2021, https://www.climatebonds.net/files/reports/cbi_gba_glio_02c.pdf

► A leapfrog moment for the ESG reporting

The Chinese government is now rapidly improving its corporate reporting landscape and striving to integrate sustainable development strategies into business' daily operation and management activities. According to a report released by SynTao, the number of companies that produce Environmental, Social and Governance (ESG) reports on a regular basis in China increased exponentially over the last few years. By May 2021, 1,092 Chinese A-share companies (companies listed on the Shanghai and Shenzhen Stock Exchanges) published annual ESG reports. The largest companies are more likely to issue ESG reports, 85% of the CSI300 companies (the 300 largest A-share stocks) had published their non-financial figures and proactive communicated with the various stakeholders, that's a number nearly matching the 90% rate among S&P 500⁵⁶ companies⁵⁷. From a geography perspective, **Shenzhen is now stepping up efforts to stimulate the ESG reporting as well, with recently announced China's first law and regulation in the field of green finance, the "Shenzhen Special Economic Zone Green Finance Regulations"**. As a nationwide pioneer, the policy came into effect on 1 March 2021, and offered a staged mandatory reporting plan for listed financial companies, green bond issuers, local banks and asset management institutions and investors⁵⁸.

Shenzhen is now stepping up efforts to stimulate the ESG reporting

The ESG reporting status of A-share companies in Shanghai and Shenzhen Stock Exchange, 2020



56. The S&P 500® is widely regarded as the best single gauge of large-cap U.S. equities. The index includes 500 leading companies and covers approximately 80% of available market capitalization. <https://www.spglobal.com/spdji/en/indices/equity/sp-500/#overview>

57. The World Economic Forum, <https://www.weforum.org/agenda/2021/03/chinese-business-leapfrog-moment-esg-reporting/>

58. Shenzhen Municipal People's Government, http://jr.sz.gov.cn/sjrb/xxgk/zcfg/dfjrzc/jrfzzc/content/post_8279891.html

With a series of stringent requirements announced in 2020, **Hong Kong is setting a new pace for ESG reporting in Asia**. By July 2021, 2,418 companies issued ESG reports, accounting for 93.8% of all companies listed in the Stock Exchange of Hong Kong⁵⁹. Recently, Hong Kong's SFC issued a new guideline to enhance the disclosures for funds that incorporate ESG factors as a key investment focus⁶⁰, and the Stock Exchange also published three announcements, to facilitate Climate-Related Financial Disclosures (TCFD)-aligned reporting, analyze the IPO applicants' corporate governance and ESG practice, and provide a centralized ESG educational platform⁶¹. With that, Hong Kong is expected to become a global ESG reporting and investment hub, and bridge the gaps (i.e. the integration of reporting standards, major issuers, contents, regulations) within the GBA cities. Businesses and company executives should, therefore, not only be ready to adopt a sustainability strategy but also be ready to communicate their progress to the government and other stakeholders (including customers and investors) using the globally recognized sustainability reporting standards.

2. Penetration of EVs into the GBA

China leads the world in deployment of electric vehicles (EVs) with almost 5.4 million stock in 2020, and continues to drive the global EV sales increased by around 140% in the first quarter of 2021, with local sales reaching around 500,000⁶².

Guangdong is standing out in the EV market, with a total amount of 208,700 production and 166,316 sales of EV in 2020⁶³. Its strong momentum remained in the first nine months of 2021, showing 176.8% YoY growth of EV production⁶⁴. By 2025, Guangdong aims to have over 600,000 EVs on the road⁶⁵, with 5,000 charging stations and 250,000 charging piles⁶⁶. To achieve the goal, Zhaoqing, the largest city in the GBA is expected to form an electric vehicle industry cluster with policy supports and sufficient investments from domestic and overseas.

59. <https://baijiahao.baidu.com/s?id=1715524308194963205&wfr=spider&for=pc>

60. The Securities and Futures Commission, <https://apps.sfc.hk/edistributionWeb/gateway/EN/circular/products/product-authorization/doc?refNo=21EC27>

61. The Stock Exchange of Hong Kong Limited, https://www.hkex.com.hk/News/Regulatory-Announcements/2021/211105news?sc_lang=en

62. Global EV Outlook 2021, <https://www.iea.org/reports/global-ev-outlook-2021?mode=overview>

63. Energy Bureau of Guangdong, http://drc.gd.gov.cn/snyj/bmgl/content/post_3297033.html

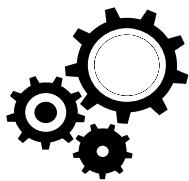
64. The statistic bureau of Guangdong, http://stats.gd.gov.cn/tjkx185/content/post_3585153.html

65. The government of Guangdong, https://www.gd.gov.cn/zwgk/jhgh/content/post_3097824.html

66. Energy Bureau of Guangdong, http://drc.gd.gov.cn/snyj/bmgl/content/post_3297033.html

Key indicators show Guangdong's top1 position in China's electric vehicle market, 2020

Production



208,700

Production

Stock and Sales



166,316

Sales

Charging stations & piles



3,450

Charging station

27.6%

YoY growth

410,000

Total stock

150,000

Charging piles

Source: Energy Bureau of Guangdong, EY analysis

At the end of September 2021, Hong Kong had 24,445 EVs, representing about 2.6% of the total number of vehicles, and 4,639 EV chargers for public use, including 2,408 medium chargers and 779 quick chargers⁶⁷. The private car is the key focus of electric transition in Hong Kong, considering it takes a large share of total vehicles (more than 70%) and has high carbon emissions. Public transportation is also critical, as it's commonly used due to the extremely high population density and compact urban form. On 17 March 2021, Hong Kong government announced a Roadmap on Popularization of Electric Vehicles (the Roadmap)⁶⁸, setting customized strategies which target on private cars, commercial vehicles (e.g., urban taxi), public light buses, goods vehicles to penetrate the adoption of EVs, and doubling number of charging facilities and converting petrol stations. Furthermore, the city's target of phasing out new purchases of fossil fuel-powered cars by 2035 will be reviewed every five year to see if it can be brought forward and to meet its 2050 carbon neutrality goal.

67. Environment Protection Department of Hong Kong, https://www.epd.gov.hk/epd/english/environmentinhk/air/prob_solutions/promotion_ev.html

68. Roadmap on popularisation of electric vehicles, https://www.enb.gov.hk/sites/default/files/pdf/EV_roadmap_eng.pdf



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