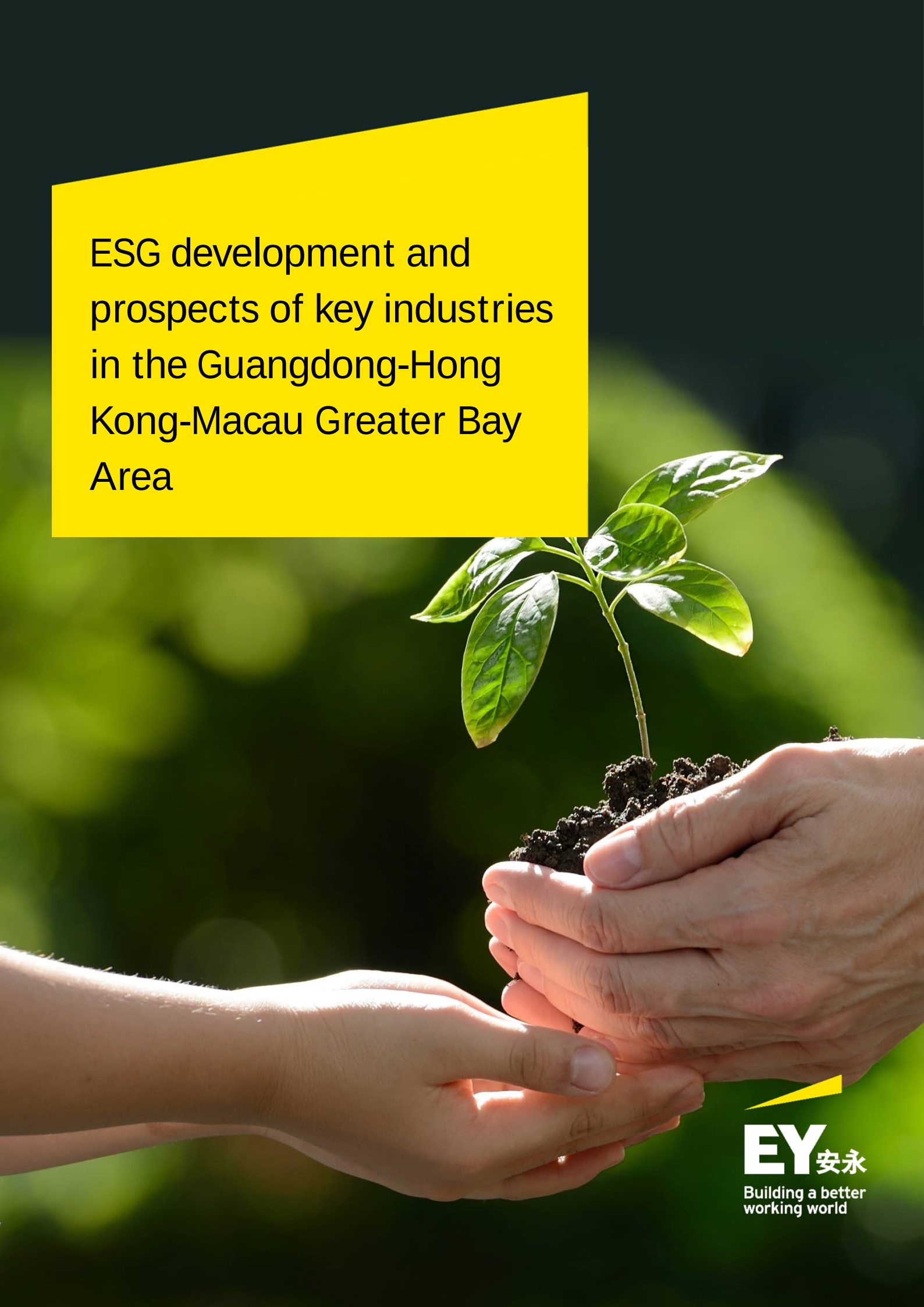
ESG development and prospects of key industries in the Guangdong-Hong Kong-Macau Greater Bay Area



EY 安永
Building a better working world

Contents

1

ESG driving force and development in the Greater Bay Area

Government policies promote ESG development

Environmental, social and governance (ESG) and climate change are gaining global attention, and the Chinese mainland and Greater Bay Area (GBA) are no exception. In its 14th Five-Year Plan and Long-Range Objectives Through the Year 2035, the Central Government has made it clear that it supports the development of green finance in the country[1]. Specifically, at the conference on the 14th Five-Year Plan, the Central Government emphasized its commitment to making Hong Kong a green finance center in the GBA.

The Hong Kong Special Administrative Region (HKSAR) Government is also eager to promote Hong Kong as a premier financing platform for governments and green enterprises in the mainland and around the globe. Its plan to achieve this objective was stated in its Policy Address 2022, where it was announced that the Council for Sustainable Development will be reorganized into the new Council for Carbon Neutrality and Sustainable Development. The new Council will advise on decarbonization strategies and support sustainable development and decarbonization efforts.

With sustainable development being a strategic priority for the GBA, significant resources will be directed towards the region's sustainable development, thereby creating growth and opportunities in ESG and green and sustainable finance.

Investors demand ESG enhancements and comprehensive disclosure

Calling for greater transparency and data accountability from businesses, investors and the capital market are pushing for improved ESG data disclosure and consistency. A survey conducted by EY in 2021 found that 74% of investors said the Covid-19 pandemic made them more likely to divest based on poor ESG performance[2]. The EY Global Corporate Reporting and Institutional Investor Survey in 2022 showed that 99% of investors surveyed use companies' ESG disclosures as part of their investment decision-making process, with 74% using a rigorous and structured approach. By comparison, the same survey in 2018 found that only 32% of investors surveyed were using a rigorous approach. These results show a significant shift in investor attitudes. Sustainability disclosures are now considered an important insight for investors looking to understand the impact of an issue on business performance, risk and long-term growth prospects[3]. Companies in the GBA are also receiving more ESG-related inquiries from investors. According to an investor relation survey by the SZSE[4], half of the surveyed companies said they had answered ESG-related questions and disclosed ESG-related information in 2020. Listed companies under the SZSE are beginning to develop ESG awareness and are willing to exchange ESG information with investors. With growing expectations and demands from investors, companies will ultimately need to place greater emphasis on ESG management and disclosure.

1. Outline of the 14th Five-Year Plan (2021-2025) for Economic and Social Development and Long-range Objectives through the Year 2035 of the People's Republic of China p.96, https://www.ndrc.gov.cn/xxgk/zcfb/ghwb/202103/P020210323538797779059.pdf
2. EY, https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/assurance/assurance-pdfs/ey-institutional-investor-survey.pdf
3. EY, https://www.ey.com/en_gl/assurance/how-can-corporate-reporting-bridge-the-esg-trust-gap
4. Shenzhen Stock Exchange, https://www.szse.cn/aboutus/trends/news/t20210409_585489.html

Regulatory bodies tighten ESG disclosure requirements

Regulatory bodies in the GBA are stepping up on their ESG disclosure requirements, calling for more transparency and comparability, by mandating more comprehensive ESG and climate change reporting. Published by the Hong Kong Stock Exchange (HKEX), the updated ESG Reporting Guide for listed companies came into effect on 1 July 2020, requiring listed companies to publish a board statement on ESG and to provide enhanced disclosure of environmental targets, climate-related issues and social key performance indicators (KPIs).

In December 2021, the HKEX went further and revised its Corporate Governance (CG) Code to require ESG reports to be published alongside annual reports, starting in fiscal year 2022[5]. The HKEX also issued a Guidance on Climate Disclosures in 2021 to help issuers align with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. This mandatory disclosure will be rolled out across relevant sectors by 2025. The Cross-Agency Steering Group, co-chaired by the Hong Kong Monetary Authority (HKMA) and Securities and Futures Commission (SFC), has also announced similar plans for 2025 across relevant sectors[6].

Fund managers are also subject to higher ESG disclosure standards. In 2021, the SFC released a new circular that provided further guidance on enhanced disclosure for ESG funds and additional guidance for funds with a climate-related focus. The SFC also introduced new requirements for climate risk management for all fund managers[7]. In August 2022, the SFC published its *Agenda for Green and Sustainable Finance*[8], which outlined further steps to support Hong Kong's position as a regional green finance center.

The Agenda focuses on corporate disclosures, asset management and ESG funds and carbon markets. Key points include the possibility of adopting the International Sustainability Standards Board (ISSB) climate standards as part of the reporting framework, and aligning Hong Kong's disclosure with the TCFD with it. At the 2022 United Nations Climate Change Conference, or COP27, the ISSB made key announcements about the implementation of climate-related disclosure standards in 2023[9].

To stay compliant with regulatory requirements, companies in the GBA must keep abreast of regulatory developments and aim for a more comprehensive ESG disclosure.

Although the Shenzhen Stock Exchange (SZSE) currently has no mandatory ESG disclosure requirements for listed companies, it released an ESG Ratings Methodology and ESG Indices[10] in July 2022 to meet the growing demand for ESG investments and to advance the development of a green and low-carbon economy in support of China's carbon peak and carbon neutrality goals.

5. HKEX, https://www.hkex.com.hk/News/Regulatory-Announcements/2021/211210news?sc_lang=en
6. HKMA, https://www.hkma.gov.hk/eng/news-and-media/press-releases/2021/07/20210715-4/
7. SFC, https://apps.sfc.hk/edistributionWeb/gateway/EN/circular/products/product-authorization/doc?refNo=21EC27
8. SFC, https://www.sfc.hk/en/Sustainable-finance
9. International Financial Reporting Standards Foundation, https://www.ifrs.org/news-and-events/news/2022/11/issb-cop27-progress-implementation-climate-related-disclosure-standards-in-2023/
10. Shenzhen Stock Exchange, http://www.szse.cn/English/about/news/szse/t20220727_595057.html

Carbon market takes off in the GBA

The development of a carbon market has been a key focus for regulatory bodies in the GBA and the HKSAR Government. The SFC is committed to supporting Hong Kong as a regional green finance center, with a particular focus on the carbon market. To that end, the SFC is working with the Cross-Agency Steering Group's Carbon Market Work Stream to establish a regulatory framework for the carbon market.

In 2022, the Steering Group published a *Carbon Market Opportunities for Hong Kong Preliminary Feasibility Assessment*[11], which outlines a plan for Hong Kong to become a global, high-quality voluntary carbon market while fostering cooperation within the GBA and with the mainland. The feasibility study identified four key directions for the Carbon Market Work Stream:

- Develop Hong Kong into a global, high-quality voluntary carbon market
- Collaborate with relevant authorities and stakeholders to work towards establishing the GBA Unified Carbon Market in line with mainland policies
- Explore opportunities to link international investors with the GBA Unified Carbon Market and potentially the national emissions trading system (ETS)
- Strengthen cooperation with the Guangzhou Futures Exchange on carbon market development to enable Hong Kong to act as the mainland's offshore risk management center

On October 2022, the HKEX launched Core Climate, a new international carbon marketplace that will provide transparent and effective trading of voluntary carbon credits and instruments across Asia and beyond. This marks a major milestone for carbon market development in Hong Kong. The platform connects corporates and investors with the tools and resources they need to decarbonize their operations. With its one-stop solution, sourcing, trading, settlement and retirement of all types of well-governed and internationally certified carbon credits projects can be facilitated on the platform, connecting the East and the West in the quest for low-carbon solutions. Market participants, particularly corporates in the GBA, can purchase carbon credits from internationally certified carbon projects from around the world, including carbon avoidance, reduction and removal projects to help them transition to a low-carbon future[12].

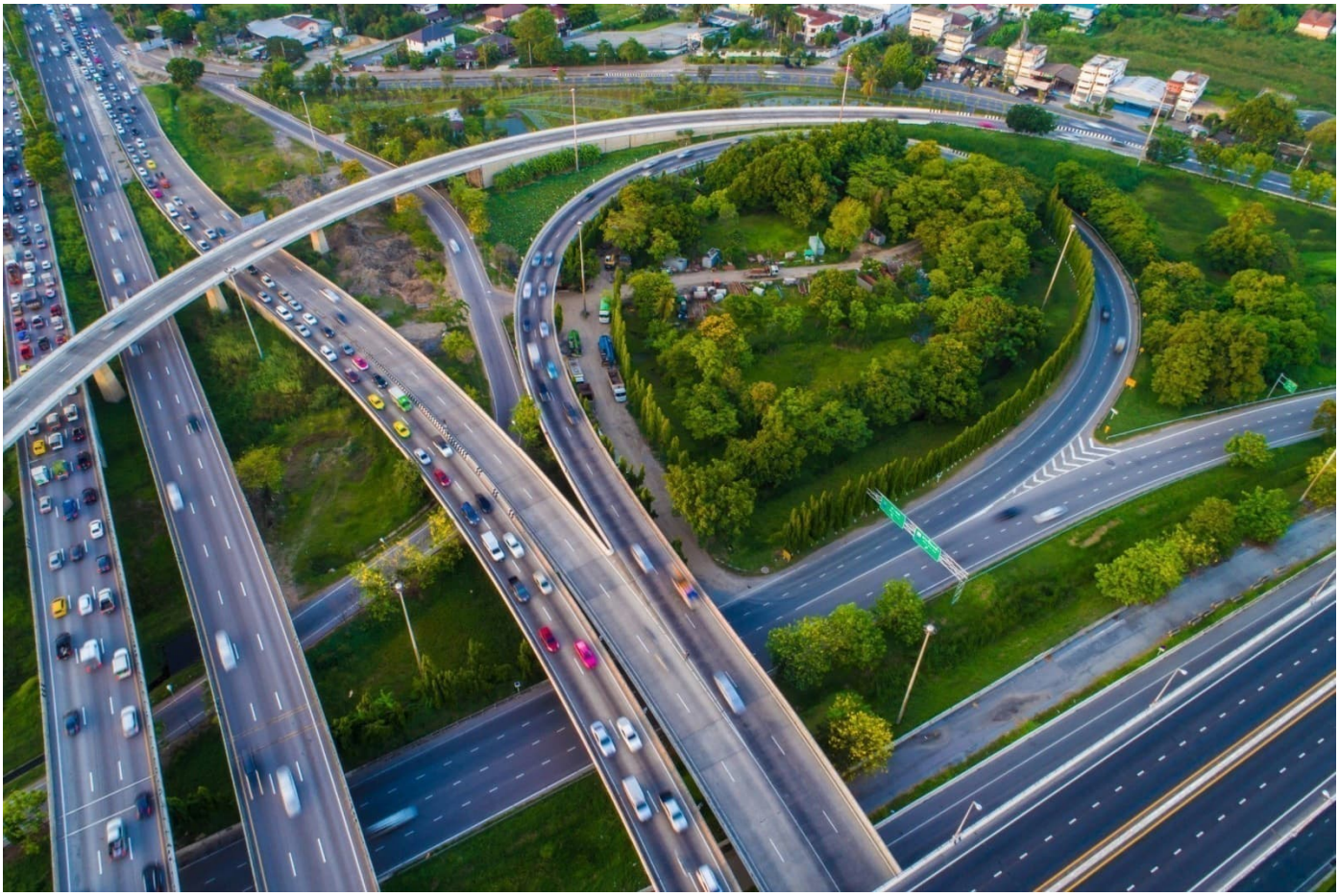
Thanks to its leading position as an international financial center and close ties to the mainland, the carbon market in Hong Kong has the potential to serve as a facilitator and connect the mainland with the rest of the world by directing more global capital to the mainland and the GBA through carbon credit projects. This creates numerous opportunities in the fight against climate change.

11. Green and Sustainable Finance Cross-Agency Steering Group Carbon Market Workstream, https://www.sfc.hk/-/media/EN/files/CEOO/CASGWS3PreliminaryCarbonFeasibilityAssessmentEnglish3032022.pdf
12. HKEX, https://www.hkex.com.hk/Join-Our-Market/Sustainable-Finance/Core-Climate?sc_lang=en

Supporting social entrepreneurship and impact investing

While the focus on environmental issues has gained widespread support in various sectors, the social component of ESG is still in its infancy. As ESG becomes increasingly important, social entrepreneurship incubation and impact investing have become key areas of focus in the GBA. Social entrepreneurship aims to incorporate social issues into business models to solve social problems, rather than just providing charity and funding. Impact investing is an investment strategy that aims to generate financial returns while also addressing social and environmental issues. In Hong Kong, we are seeing an increasing number of social enterprises and impact enterprises that aligned their business with sustainable development goals and impact investing is becoming a way for these companies to secure funding for their business development.

Given these trends, companies in the GBA are encouraged to seize opportunities and minimize relevant ESG or climate risks by prioritizing enhancement of their ESG and climate change management. In particular, companies in the GBA should focus on the industries mentioned below.



2 Development of key industries under the ESG trend

New energy

Overview of new energy development in the GBA

Transforming the energy sector is critical to decarbonization efforts. In recent years, experts have explored a variety of renewable energy sources in order to reduce reliance on fossil fuels. Solar and wind power have received the majority of investment in renewable energy, resulting in well-developed and mature industry chains globally. As the world's factory, China has a large market share in the manufacturing of solar and wind energy devices, including photovoltaic panels and wind turbines.

According to the International Energy Agency (IEA), China is predicted to supply nearly all of the key building blocks for solar panel production worldwide through 2025. China's share of global polysilicon, ingot and wafer production is expected to reach almost 95% in 2025[13]. Data from the Global Wind Energy Council's Market Intelligence shows that China holds a 58% market share of global wind turbine manufacturing capacity[14]. According to BloombergNEF[15], six of the top 10 global wind turbine makers in 2020 were Chinese companies.

Although the GBA is not a major manufacturing area for these products, the region's high energy demand and low energy self-sufficiency rate[16] remain to be key challenges on its decarbonization journey. In line with national decarbonization policies, the Energy Bureau of Guangdong Province released the 14th Five-Year Plan for Energy Development in early 2022, which aims to vigorously develop advanced offshore wind and solar power and accelerate the cultivation of emerging industries such as hydrogen energy, energy storage and smart energy. Among these, hydrogen energy is considered one of the main alternatives to fossil fuels due to its wide availability. At least five cities in the GBA have announced plans for the development of hydrogen energy and have begun conducting feasibility studies and experiments on hydrogen, particularly hydrogen fuel cells.

According to documents from the Guangdong Provincial Development and Reform Commission, the GBA aims to become a hub for the development of the hydrogen energy industry and to expand the hydrogen energy application market through multiple channels. Guangzhou and Shenzhen aim to become research and development and manufacturing bases for high-temperature fuel cells and systems. Guangzhou, Foshan and Dongguan are targeting the development of high-end hydrogen energy equipment industries. Cities such as Huizhou and Dongguan are focusing on the development of hydrogen energy storage and transportation industries.

13. IEA, https://www.iea.org/reports/solar-pv-global-supply-chains/executive-summary
14. Global Wind Energy Council, https://gwec.net/wp-content/uploads/2022/04/Annual-Wind-Report-2022_screen_final_April.pdf
15. Bloomberg, https://www.bloomberg.com/news/articles/2021-03-10/ge-topples-vestas-as-world-s-biggest-wind-turbine-maker
16. People's Government of Guangdong Province, https://www.gd.gov.cn/zwgk/zcjd/bmjd/content/post_3909391.html

Case study
Smart energy demonstration community in Nanhai

Nanhai District in Foshan is home to China's first intelligent energy demonstration community[17], located in the town of Danzao. The community aims to industrialize fuel cell distributed facilities that provide both heat and electricity and will be the first carbon-neutral neighborhood in mainland China. It is also a key part of the Foshan Nanhai Hydrogen Energy Center, which is being developed with the support of the Nanhai government to become a leading hydrogen energy center in the region, attracting research and development, human capital and other resources. The center will include a Hydrogen Energy Museum, a hostel, and will be located near the Nanhai Danzao Japanese SME Industrial Park.

The ultimate goal of the community project is to create a complementary smart energy system using wind, light, electricity and gas. The core of the system is a multi-energy complementary microgrid that is powered by fuel cell distributed cogeneration equipment. Through this system, the demonstration community will be able to promote the interconnection of renewable energy and the trial implementation of national standards and norms for hydrogen energy in housing and buildings.

The project is divided into two phases. During the first phase, the community relies on the existing urban gas supply network to provide energy to most of the community through fuel cells. A smart energy management control system is also introduced to increase energy efficiency. Upon completion of the first phase, the second phase will introduce photovoltaic devices to generate electricity, which will be used to produce hydrogen through the electrolysis of water[18]. This will allow the community to completely sever its reliance on the electricity grid and gas pipeline, becoming a truly carbon-neutral community.

In comparison with current practices, the demonstration community is expected to reduce carbon emissions and costs by about 50% and 45% respectively. This will accelerate the low-carbon development of cities in China and the development of hydrogen communities. By building the country's first smart energy community demonstration project, the GBA has the opportunity to take a leading role in the development of the smart energy industry, quickly forming a smart energy industrialization base and gathering industrial clusters for the development of future urban industries. It will also create a new opportunity for China's fuel cell distributed energy and smart energy industry and help achieve “carbon peaking and carbon neutrality” as soon as possible.

17. Department of Housing and Urban-Rural Development of Guangdong Province, http://zfcxjst.gd.gov.cn/zwzt/2022jnxcy/xmjs/03/
18. Nanfang Daily, https://news.southcn.com/node_54a44f01a2/aa6c7fafe9.shtml

► *Opportunity and challenges of new energy in the GBA*

The GBA presents several opportunities for green and low-carbon development, particularly in the areas of power supply and grid integration. Hydrogen energy is seen as a key direction for new energy development, and the region is well-positioned to take advantage of emerging applications in this field.

However, there are also challenges to be addressed. For example, the potential of terminal application scenarios has not yet been fully explored. While the transportation sector is currently a key focus for the downstream application market of the hydrogen energy industry, other potential fields such as energy storage, petrochemical, steel and construction have not yet been fully tapped due to limited supplies and high fuel costs. To fully realize the potential of hydrogen as a sustainable energy source, global efforts in the development of green hydrogen will be necessary.

Green transportation

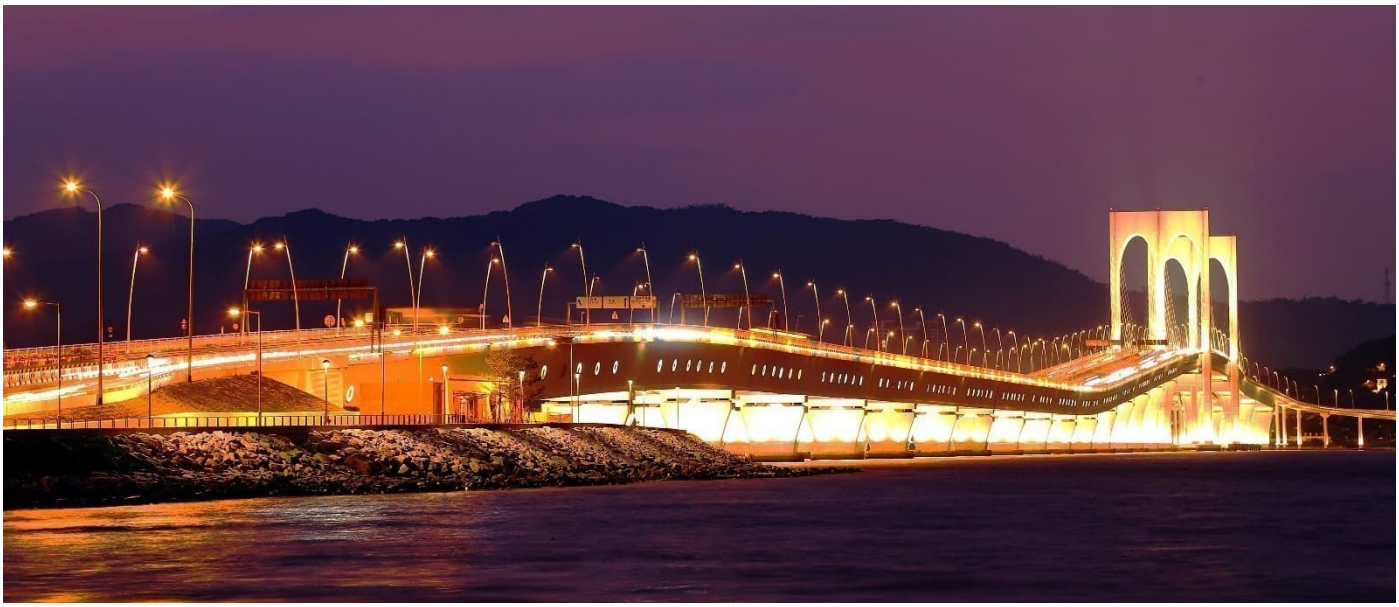
Transportation is a significant contributor to greenhouse gas (GHG) emissions, accounting for approximately one quarter of global GHG emissions in 2019[19]. To meet carbon neutrality targets, it is crucial to decarbonize the transportation sector. The Chinese mainland and Hong Kong have implemented a range of policies and measures to promote green transportation and decarbonization. Key developments in this area include electric vehicles (EVs) and supporting infrastructure, hydrogen as an alternative fuel and intercity railway networks.

► *Promoting the use of Electric Vehicles (EVs) to pursue zero vehicular emissions*

Through a series of policies including government strategies, regulations and incentives, China has seen significant growth in its EV market. According to the China Association of Automobile Manufacturers, the penetration rate of new energy vehicles in China reached 33.8% in November 2022, up from 5.4% in 2020[20].

19. Intergovernmental Panel on Climate Change, https://report.ipcc.ch/ar6/wg3/IPCC_AR6_WGIII_Full_Report.pdf
20. China Association of Automobile Manufacturers, http://www.caam.org.cn/

According to the China Electric Vehicle Charging Infrastructure Promotion Alliance[21], Guangdong has the largest EV charging network in China, with 345,126 public charges and 19,116 charging stations as of September 2022. Guangdong Power Grid Corporation plans to invest RMB532 million (approx. US$74 million) during the 14th Five-Year Plan period (2021-2025) to further accelerate the construction of charging facilities[22]. In Hong Kong, there are a total of 39,114 EVs and 5,283 public EV charges as of September 2022[23]. The HKSAR Government has also released the Hong Kong Roadmap on the Popularization of Electric Vehicles, which outlined long-term policy objectives and plans to promote the adoption of EVs and supporting infrastructure. Key measures outlined in the roadmap include the cessation of new registrations for fuel-propelled and hybrid private cars in 2035 or earlier, trials for electric public transport and commercial vehicles, and the expansion of the EV charging network across Hong Kong[24]. As part of these efforts, the HKSAR Government will provide an additional 7,000 parking spaces with EV chargers in government premises by 2025, as outlined in the recently announced Policy Address 2022[25]. The government has also established a HK$3.5 billion (approx. US$450 million) Home Subsidy Scheme to subsidize the installation of EV chargers for existing private residential buildings[26]. The widespread adoption of EVs will help improve roadside air quality and reduce GHG emissions, ultimately helping Hong Kong achieve zero vehicular emissions before 2050 and contributing to the region's carbon neutrality targets.



21. https://mp.weixin.qq.com/s/zpKVewcPy0qF5OS05suB7Q
22. China Economic Net, http://en.ce.cn/main/latest/202210/31/t20221031_38201259.shtml
23. Environmental Protection Department, https://www.epd.gov.hk/epd/english/environmentinhk/air/promotion_ev/promotion_ev.html
24. Environmental Protection Department, https://www.epd.gov.hk/epd/english/resources_pub/policy_documents/index.html
25. Policy Address 2022, The Chief Executive's 2022 Policy Address
26. Environmental Protection Department, https://www.evhomecharging.gov.hk/en

► *Hydrogen as an alternative fuel*

Hydrogen fuel cells generate electricity with minimal pollution by converting hydrogen and oxygen into electricity. While still in its early stages, hydrogen can potentially play a significant role in decarbonizing energy-intensive industries, particularly in transportation.

The Guangdong Provincial Development and Reform Commission released a three-year (2022-2025) action plan in August 2022 with the goal of positioning Guangdong as a global leader in the hydrogen vehicle industry. According to the plan, Guangdong aims to have more than 10,000 fuel-cell electric vehicles (FCEVs) on the road, build more than 200 hydrogen refuelling stations, and increase annual hydrogen supply capacity to more than 100,000 metric tons by 2025. The province will also provide subsidies of up to RMB2.5 million (approx. US$350,000) to hydrogen refuelling stations that begin operations between 2021 and 2025 and have a daily refuelling capacity of more than 500 kg[27].

At present, Hong Kong has yet to set its own hydrogen-specific targets and strategies. To promote the local adoption of FCEVs, the HKSAR Government established an inter-departmental working group in 2021. The working group is tasked with assessing the implementation issues for FCEVs, including the supply of hydrogen energy, supporting infrastructure, safety considerations, and regulation and legislation[28]. In August 2022, a leading bus company in Hong Kong introduced Hong Kong's first hydrogen-powered double-decker bus, which was specially designed and built for the region's unique topography. The bus is equipped with a 450 kWh battery and has an estimated range of over 200 km[29]. However, the hydrogen-powered bus has not yet been put into operation due to the lack of relevant regulations in Hong Kong.

The deployment of hydrogen in the transportation sector requires a comprehensive policy and regulatory framework. Several jurisdictions, including South Korea, have passed hydrogen-specific legislation governing the production, storage, transportation, distribution and use of hydrogen. South Korea's Hydrogen Economy Promotion and Hydrogen Safety Management Law, which came into effect in 2021, focuses on three key areas: hydrogen vehicles, refuelling stations and fuel cells[30]. The implementation of the law is expected to accelerate South Korea's goal of increasing FCEV production to 6.2 million and raising the number of hydrogen refuelling stations to 1,200 by 2040[31]. The GBA could consider a similar approach in establishing a comprehensive regulatory framework for the use of hydrogen in the transportation sector.

The competitiveness of FCEVs largely depends on the costs of hydrogen. Currently, green hydrogen costs around RMB40 (approx. US$5.5) per kilogram in Guangdong[32]. By 2025, the retail price of hydrogen for FCEVs in Guangdong is projected to fall to less than RMB30 (approx. US$4.4) per kilogram[33], making it a more affordable and attractive option. In the future, the GBA can leverage its advantage of having a fully integrated hydrogen supply chain and being the largest FCEV industry cluster in China to produce large-scale hydrogen. As technology improves and production scales, the costs of hydrogen will become more economically viable.

27. Guangdong Provincial Development and Reform Commission, http://drc.gd.gov.cn/ywtz/content/post_3993253.html
28. HKSAR Government press releases, https://www.info.gov.hk/gia/general/202202/16/P2022021600224.htm
29. Yahoo news, https://finance.yahoo.com/news/hong-kongs-first-ever-double-044100406.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuYmluZy5jb20v&guce_referrer_sig=AQAAAAj7-BKeiMxChxwhb8CC3tKStIi11oBSITJBeexiApbsmsaeUm3PQuQyTg62SoR3gDO9916XsOliZGc9pu9edGYaUGfjiY9I3rMOVsT5TyOq2hNATLFgjpb2WVSoIHBdQdzqV0TNyV4h_vQa7OsnOQ3gi4bOv48IJgYVRI9F3x2E
30. The Korea Herald, http://www.koreaherald.com/view.php?ud=20210208000926
31. International Energy Agency, https://www.iea.org/policies/6566-korea-hydrogen-economy-roadmap-2040
32. South China Morning Post, https://www.scmp.com/business/article/3194930/hong-kongs-towngas-says-hydrogen-production-tests-successful-ready-fuel
33. Guangdong Provincial Development and Reform Commission, http://drc.gd.gov.cn/ywtz/content/post_3993253.html

Case study

Foshan Gaoming Hydrogen-Powered Tram Demonstration Line

The Foshan Gaoming Tram Demonstration Line is the world's first commercially operated hydrogen-powered tram. The demonstration line has two phases with a total project investment of RMB1.07 billion (approx. US$149 million)[34]. Phase one of the demonstration line began operation in December 2019 and is approximately 6.6 km long with 10 stations. Each tram has a maximum capacity of 360 passengers and can reach speeds of up to 70 km per hour[35]. The demonstration line is a significant achievement as it provides valuable data for future large-scale production and application of hydrogen trams, and has positive demonstration effect for the development of the national hydrogen energy industry.

- *Promoting low-carbon lifestyle with Intercity railway network*

Improving transportation networks not only provides greater convenience for the movement of goods, services and talent, but also creates new investment opportunities within and beyond the GBA. In 2020, the National Development and Reform Commission approved the RMB474.1 billion (approx. US$66 billion) Guangdong-Hong Kong-Macao Greater Bay Area Intercity Railway[36]. The intercity railway plan will help to achieve a “one-hour living circle” by integrating high-speed railways, intercity railways and local metro lines. Under the plan, the rail network in the GBA is expected to reach 4,700 km by 2025 and 5,700 km covering cities above the county level in Guangdong province by 2035.

As the intercity railway plan gains momentum, it will bring new investment opportunities such as the transit-oriented development (TOD). Well-designed TOD promotes low-carbon lifestyles and has the potential to reduce carbon emissions. TOD not only encourages a shift from private vehicles to public transit, but also creates connected and compact urban spaces that facilitate walking and cycling. A notable example of TOD investment is the West Kowloon Station in Hong Kong. The West Kowloon Station provides seamless connections between Hong Kong and major cities in the Chinese mainland via the Guangzhou-Shenzhen-Hong Kong Express Rail Link, as well as the rest of the world through the Airport Express and the Hong Kong International Airport. It also serves as an integrated hub for people to live, work and play with well-connected walkways and landscaped pedestrian paths.

34. People's Government of Guangdong Province, https://www.gd.gov.cn/gdywdt/dsdt/content/post_2708629.html
35. Sohu news, https://www.sohu.com/a/357357999_479470
36. National Development Reform Commission, https://www.ndrc.gov.cn/xwdt/tzgg/202008/t20200804_1235524.html?code=&state=123

Real estate

► *Decarbonizing real estate in the GBA*

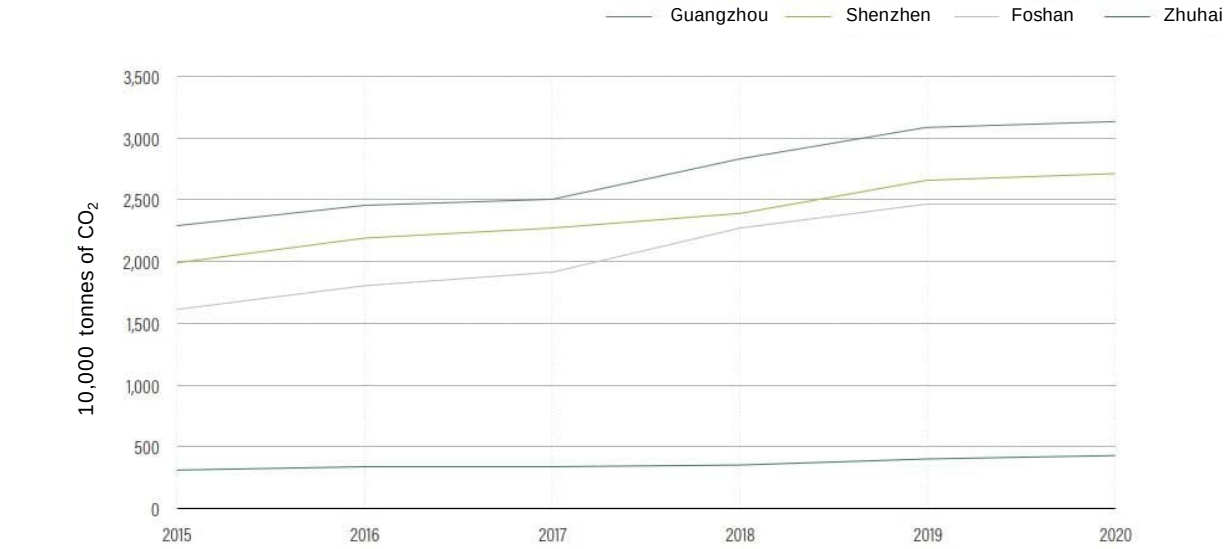
China's goal of achieving carbon peak by 2030 and carbon neutrality by 2060 has made the building sector a key area in need of decarbonization. Additionally, carbon emissions from building operations in GBA cities such as Guangzhou, Shenzhen, Foshan and Zhuhai are also rising, posing an even greater challenge for the real estate sector in its decarbonization journey. In particular, the carbon emissions of Guangdong Province accounted for 5.2% of national emissions, highlighting the importance of green building development within the GBA[37].

Green building initiatives are now an official national agenda. The 14th Five-Year Plan in Guangdong Province emphasizes the importance of the GBA region leading the way towards carbon neutrality. According to the latest adoption of the 14th Five-Year Plan Development Plan for Energy Saving and Green Buildings, all new urban buildings must comply with certain green building standards by 2025[38]. In addition, a working group on Carbon Footprint Certification within the GBA was established[39]. Hong Kong will work closely with committee members to promote a green and low-carbon economy across the region.

As for Hong Kong, the HKSAR Government has outlined major decarbonization strategies in its Hong Kong Climate Action Plan 2050[40]. The four major decarbonization strategies, including energy saving and green building, are emphasized as a way to reduce the electricity consumption of commercial and residential buildings by 30-40% by 2025.

Both national and regional policies are strong drivers for the growth of green building development. To meet the ambitious targets for both carbon emission reduction and energy consumption, regulatory bodies are increasingly prioritizing green building development in policy agendas, supplemented by tightening regulations and progressive urban planning.

Figure ES-1. 2015-2020 Building operation stage carbon emissions four study cities



Source: Working paper calculation from "Decarbonising Buildings in the Greater Bay Area: Policy Recommendations and the Role of Sustainable Finance"

37. HKGFA, https://www.hkgreenfinance.org/wp-content/uploads/2022/10/GBA-Green-Buildings-Executive-Summary.pdf
38. HKGFA, https://www.hkgreenfinance.org/wp-content/uploads/2022/10/GBA-Green-Buildings-Executive-Summary.pdf
39. Shenzhen Green Building Association, http://www.cngbol.net/index.php?ac=article&at=read&did=3316
40. HKSAR Government, https://www.info.gov.hk/gia/general/202110/08/P2021100800588.htm?fontSize=1

► *Green building development across the GBA*

Over the past decade, policies on green building in the GBA have undergone revisions and updates. In China, green building development is supported by the China Association of Building Energy Efficiency. The green building certification system[41] has been in place since 2006, with a new version of the green building evaluation standard GB/T 50378 implemented in 2019. Four levels of green building classification are available, namely basic, one-star, two-star and three-star, with a requirement that at least 45% of new green buildings in nine GBA cities[42] be certified with at least one-star under the China Green Building Labels.

In Macau, the Green Building Evaluation Standard, managed by the China Green Building and Energy Saving Association (Macau), with similar green building standards ranging from one-star to three-star, is adopted. In Hong Kong, similar green building commitments[43] can also be found, requiring new government buildings with a construction floor area greater than 5,000 m^2 with central air conditioning or greater than 10,000 m^2 to achieve at least BEAM Plus Gold, and new public housing to achieve at least BEAM Plus Gold.

The main difference between Hong Kong, Macau and GBA cities in terms of green building regulation is the different standards adopted. In Hong Kong, international green building standards such as BEAM and Leadership in Energy and Environmental Design (LEED) certifications are adopted, while in GBA cities and Macau, the nationwide green building certification system is adopted instead. This creates potential challenges for investors when evaluating the sustainability performance of real estate businesses, as GBA cities do not have a consistent green building standard to follow.

To address this, policy makers should support property developers in applying for international green building certifications such as LEED and BEAM Plus, and integrate local and international green building standards. To encourage the adoption of these international standards, governments could also offer financial incentives such as subsidies for green building certification applications.

Green building development plays a crucial role in decarbonizing the real estate sector, but it alone may not be enough to help China and Hong Kong achieve carbon neutrality. The development of zero-carbon buildings, which are designed and equipped with eco-friendly technologies to achieve net-zero carbon emissions, could be a gamechanger in accelerating GBA's low-carbon transition and achieving self-sufficiency in the energy consumption of buildings. One example of a green building project in Hong Kong is the Zero Carbon Building in Kowloon Bay[44]. The park generates on-site renewable energy with photovoltaic panels and is equipped with a tri-generation system using biofuel made from waste cooking oil to achieve net-zero carbon emissions. Green building strategies were incorporated and implemented from design to construction to reduce carbon emissions, making it a leading practice in Hong Kong.

Moving forward, local governments could play a more active role in leading green building towards decarbonization. Japan has strengthened its green building development by proposing the mandatory installation of solar panels in all newly constructed buildings (zero-energy buildings or ZEBs) and houses (zero-energy house or ZEHs) by 2030, and in all buildings and houses by 2050 (MLIT, 2022)[45]. By taking cues from Japan, local governments could tighten regulatory controls and revise target settings to incorporate more green building features in all new buildings.

41. HSBC, https://www.sustainablefinance.hsbc.com/sustainable-infrastructure/greater-bay-area-green-infrastructure
42. HKGFA, https://www.hkgreenfinance.org/wp-content/uploads/2022/10/GBA-Green-Buildings-Executive-Summary.pdf
43. HKSAR Government, https://www.info.gov.hk/gia/general/201505/14/P201505140408.htm
44. ZCP, https://zcp.cic.hk/eng/story-of-zcb
45. Climate action tracker, https://climateactiontracker.org/countries/japan/policies-action/

► *Accelerating property development and construction technology*

Over the past decade, proptech has become a popular tool for transforming the real estate sector. A survey conducted by the Urban Land Institute and the EY Greater China Region found that 44% of surveyed companies had adopted at least one proptech solution. The GBA market for proptech is expanding rapidly due to its ability to drive digital transformation in the construction industry, reduce costs and contribute to decarbonization. Shenzhen, Guangzhou and Hong Kong are particularly strong in proptech investment, accounting for 13.9% of all proptech investment in China[46].

To support the industry in adopting proptech, the Hong Kong Green Building Council has published a best practice guidebook[47] on smart building design. This guidebook outlined the use of smart construction technologies throughout the entire project lifecycle, from planning and design to construction, operation, maintenance and demolition.

Real estate enterprises in the GBA are also actively participating in the adoption of smart construction and green building technologies. For example, the GBA has adopted technologies such as building information modeling (BIM) for construction management, IoT inspection and unmanned aerial vehicle (UAV) earthwork survey. On the green building technology side, the region has also embraced smart optical storage and environmentally friendly construction materials to optimize proptech use throughout the value chain.

The production of building materials accounts for 28% of emissions[48] throughout the construction process, representing a significant portion of scope 3 carbon emissions for the real estate sector. Embodied carbon remains a major challenge for decarbonizing the construction and real estate industries. In Hong Kong, the Construction Industry Council has developed a carbon assessment tool to measure the embodied carbon of construction materials and has established carbon emission factors for over 300 materials.

With this tool, real estate and construction participants can better estimate the carbon emissions from building constructions and develop a more comprehensive carbon inventory for future decarbonization efforts. Leading developers in the GBA are also promoting the advancement of technology in procuring green building materials throughout the supply chain, using cloud computing and big data analytics to enhance digital precision in sourcing channels. These technological solutions can help address issues with unchecked quality control and lack of transparency.

► *Opportunities and challenges for real estate decarbonization*

The real estate industry presents numerous opportunities in the pursuit of a low-carbon economy, as the trend of green building development continues to grow rapidly in the GBA and national decarbonization targets become more ambitious. Green building performance, certifications and energy efficiency, as well as embodied carbon, have become crucial indicators for investors when making investment decisions and assessing asset value. It is also becoming more common for green building certifications to be used as a metric for sustainability-linked financial products by banks and real estate companies.

To fully capitalize on these investing opportunities and secure funding from global investors, real estate companies in the GBA should align with international green building practices. In order to meet regulatory requirements, outperform competitors and access financing opportunities, these companies will need to make a concerted effort towards low-carbon transition and green building development.

46. EY, https://assets.ey.com/content/dam/ey-sites/ey-com/en_cn/news/2022/09/ey-uli-gba-prop-tech-white-paper-en.pdf
47. HKGBC, https://www.hkgbc.org.hk/eng/resources/publications/Files/HKGBC_Smart-Green-Building-Design-Best-Practice-Guidebook.pdf
48. EY, https://assets.ey.com/content/dam/ey-sites/ey-com/en_cn/news/2022/09/ey-uli-gba-prop-tech-white-paper-en.pdf

Social innovation and impact investing to foster ESG development

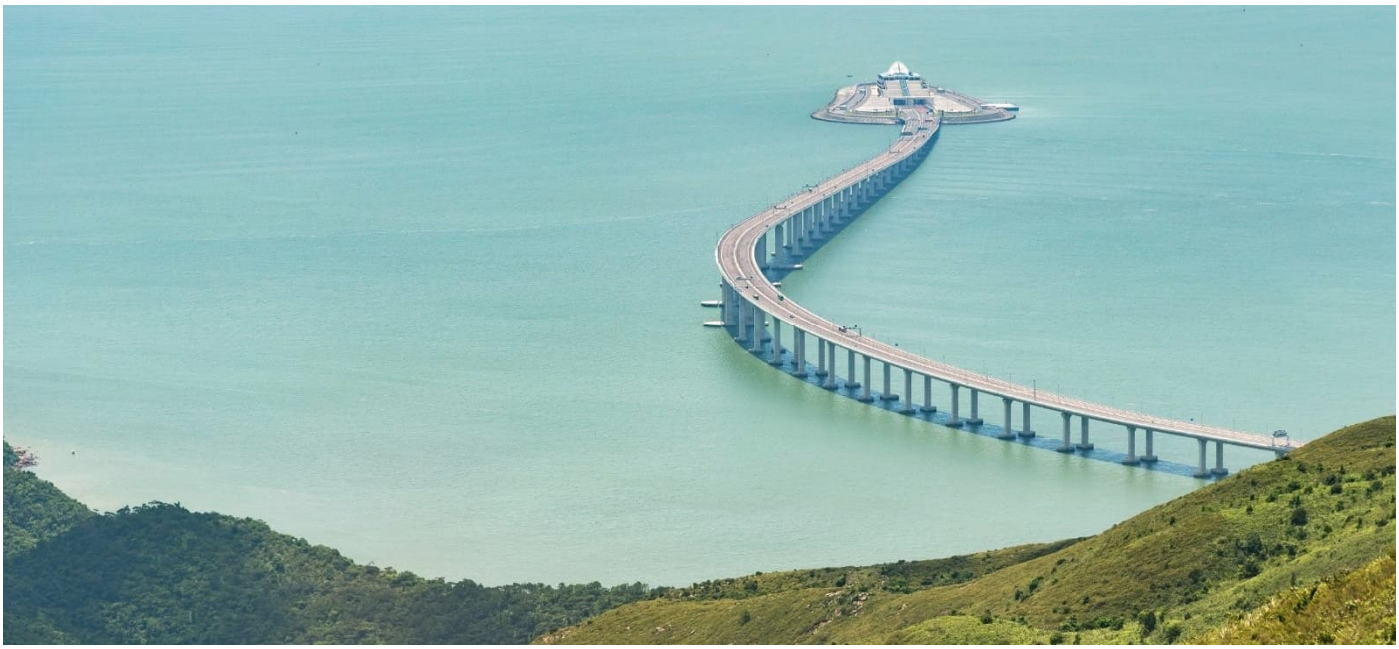
► *Latest trends in social innovation and impact investing*

In recent years, the concept of social innovation has gained widespread attention, as the awareness of social impact and innovation has increased. There has been a surge in the number of social enterprises and impact ventures with strong ESG awareness and practices. These organizations aim to empower citizens to create impact and connect the business world with community members, including disadvantaged groups, through stakeholder engagement and impact investing. Social innovation serves various social objectives and target different groups within the community, ultimately contributing to the well-being of the community.

To support social innovation, the HKSAR Government has promoted the development of social enterprises through the Social Innovation and Entrepreneurship Development Fund[49] (SIE Fund). The SIE Fund has funded 373 innovative projects as of 2022, successfully stimulated the growth of social innovation and entrepreneurship in Hong Kong. According to the Social Enterprise Directory issued by the Social Enterprise Business Centre[50], there are 711 social enterprises in Hong Kong as of 2022. With growing numbers of social enterprises and extensive support from both government and community organizations, the social enterprise ecosystem in Hong Kong is gradually maturing and moving to a new stage of social impact development.

In light of the increasing awareness of social impact and demand for impact investing, various organizations and networks have been established to connect investors with social investment opportunities. One example is the Asia Venture Philanthropy Association[51] (AVPN), the largest impact investing network in Asia, which was founded in 2011. The AVPN serves as an ecosystem builder to increase the flow of capital towards impact in Asia and has so far attracted more than 600 members from 33 industries across the Asia Pacific, covering the market in Hong Kong and the Chinese mainland.

With financial institutions, trusts and research groups joining the network as funders, the AVPN has helped to develop a steady flow of capital for social investing. Given its experience and resources, as well as its mature social innovation landscape, Hong Kong has the potential to be a leader in social innovation across the GBA, fostering social entrepreneurship and impact investing platforms for investors in Greater China.



49. SIE Fund, https://www.sie.gov.hk/en/our-work/funded-ventures/index.page?category=b04
50. SEBC, https://socialenterprise.org.hk/en/content/se-faq
51. AVPN, https://avpn.asia/

- *Incubating social entrepreneurship and reimagining business model to promote sustainable development*

Social entrepreneurship is a key component of sustainable development, and should be widely recognized in society. Unlike traditional businesses, social entrepreneurship aims to embed social issues into the business model, transforming philanthropy into a self-sustaining approach to addressing social issues. The Centre of Civil Society and Governance at the University of Hong Kong is a research center that works towards a sustainable society by developing community-based, innovative solutions to inform policy deliberation and collective action. The center is involved in a variety of sustainability projects, such as rural sustainability and inclusive employment.

One of these projects is the Rural Urban Sustainability Fellowship Program[52], which allows participants to develop nature-based solutions to address rural sustainability issues and compete for a seed grant. This incubation program is funded by leading financial institutions in Hong Kong and serves as a channel to foster collaboration between civil society, academia and the business sector. Civil society members and potential social entrepreneurs can propose innovative solutions, while corporates can gain insights on sustainability issues related to community engagement and habitat conservation, creating synergy to drive sustainability.

- *Scaling up impact capital to create investment opportunities in the GBA*

Unlike philanthropy, impact investing challenges the traditional view that social and environmental issues should be addressed solely by philanthropic donations and the perception that investments should only focus on financial returns. Impact investing is a way to address social and environmental issues while also generating financial returns. In Hong Kong, more social enterprises and impact ventures are aligning their business with sustainability goals and impact investing has become a tool for these companies to secure capital for business development.

The AVPN, as mentioned earlier, connects impact investors with social enterprises and impact projects. For example, the AVPN connected an award-winning social enterprise that aims to create a sustainable food ecosystem with a prominent foundation established by an Asia-centric commercial bank. The network brings together social enterprises for investors to consider and channels funding to Hong Kong social enterprises, which is essential for the growth of local social enterprises.

Resources sharing is another important factor in the success of social enterprises. In light of this, Dream Impact, Hong Kong's largest network of social enterprises and impact ventures, offers similar services and connects investors with social enterprises through its impact capital services. Networks and platforms like the AVPN and Dream Impact will be crucial incubators for impact projects, where investors can engage in fund matching and social ventures can make introductions to investors for their impactful projects. Impact capital matching and social ventures can offer opportunities to bridge impact financing and partner with ventures, building social capital over the long term.

It is worth noting that impact investing in mainland China is still in its early stages but has tremendous potential, with a growing number of social investment alliances in the GBA. For instance, the China Alliance of Social Value Investment (CASVI) is the first licensed international NPO specializing in building the ecosystem of sustainable finance in China. The organization has formed partnerships with more than 50 social entrepreneur foundations to foster industry exchange and accelerate social ventures.

52. CCSG HKU, https://ccsg.hku.hk/airi/

► *GBA's role and prospects*

With the growing number of impact investing networks in the GBA region, investors have the opportunity to do good for the community while also generating financial returns. By transforming their asset and fund portfolios into sustainable and impactful ones, investors can leverage their footprint in the GBA[53].

According to a survey by the Family Office Association Hong Kong (FOAHK), 90% of respondents agreed that Hong Kong is the family office hub in Asia, and 79% of those in the family office industry had allocated assets to ESG or impact investing in 2021. The World Economic Forum suggests that many multi-generational family offices are now exploring impact investing as a way to unite families around shared values and create positive legacies[54].

Given the growing interest and demand for impact investing from family offices, Hong Kong can continue to strengthen its role as a regional family office hub with the support of the GBA. At the same time, with its developed social enterprise ecosystem, Hong Kong can act as a gateway for impact investing, connecting global investors with GBA impact projects. This connection allows global investors and Asian philanthropists to play a more active role in tackling societal problems with innovative business solutions, benefiting local communities and stimulating the growth of the local economy.

The GBA has the potential to allocate resources to sustainable projects and, with Hong Kong's guidance, can direct international funding towards quality sustainable projects that contribute to China's carbon goals, and position the GBA as a decarbonization leader in Asia. By connecting the thriving and robust development of social innovation and impact investing, the GBA can make a significant impact on sustainability, with the public sector, private sector and civil society working together to drive sustainability efforts in their respective spheres.

53. Hubbis, https://www.hubbis.com/news/foahk-survey-family-offices-to-ramp-up-esg-allocations-in-2022
54. World Economic Forum, https://www3.weforum.org/docs/WEFUSA_FamilyOfficePrimer_Report.pdf

3 The role of Green and Sustainable Finance in promoting ESG and supporting key industries

Support of the Center for Green and Sustainable Finance (GSF) in the GBA

As part of the overall plan for the GBA, Hong Kong will leverage its status as an international financial center and increase investment in building a green and sustainable financial center. The green and sustainable financial center plays a crucial role in providing financial support for low-carbon transition and ESG development. The demand for GSF products is on the rise, with the Hong Kong Monetary Authority estimating that the amount of green and sustainable debt (including bonds and loans) issued in 2021 exceeded HK$50 billion, four times the amount issued in 2020[55]. As an international financial center, Hong Kong is quick to adapt to market changes in order to stay competitive in the GSF field. To keep pace with sustainable development, Hong Kong, in collaboration with other cities in the GBA, has continued to strengthen its GSF regulatory framework and deploy necessary resources to promote the regional GSF center.

To capture opportunities in GSF, the Hong Kong government has announced its intention[56] to develop GSF and promote Hong Kong as a premier financing platform for governments and green enterprises around the world, particularly in mainland China. To support this goal, the government and regulators have implemented various initiatives to upgrade the GSF ecosystem and provide necessary support for market participants pursuing GSF. These top-down efforts will help Hong Kong stay at the forefront of the GSF market and strengthen its role as a regional financial hub in the GBA.

- *Incentives for the development of green and sustainable markets*

To encourage the development of a green and sustainable financial center in the GBA, Hong Kong has introduced various practices and funding to enrich and improve its financial system with a focus on green and sustainable factors.

One example is the HKMA's Green and Sustainable Finance Grant Scheme (GSF Grant Scheme), which was released in May 2021. As the global green bond market has seen rapid growth in recent years, the GSF Scheme aims to support green and sustainable bond issuance and lending, further enriching Hong Kong's green and sustainable finance ecosystem and strengthening its position as a regional hub[57].

In addition, the HKSAR Government has taken a leading role by proposing to issue its own green bond as a way to demonstrate its commitment to sustainable development and the fight against climate change, and to promote the development of green finance. The government's Green Bond Programme has a borrowing ceiling of HK$200 billion. These efforts will help Hong Kong play a key role in driving the growth of green and sustainable markets in the GBA.

55. HKSAR Government, https://www.info.gov.hk/gia/general/202202/23/P2022022200567.htm
56. Policy Address, https://www.policyaddress.gov.hk/2022/public/pdf/policy/policy-full_tc.pdf
57. HKMA, https://www.hkma.gov.hk/eng/news-and-media/press-releases/2021/05/20210504-4/

Building GSF capacity and sharing knowledge

Hong Kong is taking steps to cultivate talent, create data platforms and facilitate information exchange as it works to build capacity and lay the foundation for the financing of green and sustainable industries in the GBA.

One such effort is the Pilot Green and Sustainable Finance Capacity Building Support Scheme[58], which provides subsidies of around HK$200 million to market practitioners and prospective practitioners to undergo relevant training and acquire professional qualifications. In addition, universities in Hong Kong have launched courses related to green and sustainable finance to provide the needed talent for the sector's development.

The Hong Kong Stock Exchange has also introduced the Sustainable & Green Exchange (STAGE), an online portal that provides information, access and transparency on a range of sustainable, green and social investment products. STAGE offers investors and asset managers easy access to information for investment due diligence, selection and monitoring of sustainable and green investments.

To further support the growth of green and sustainable finance in Hong Kong, the HKMA and the SFC have established the Green and Sustainable Finance Cross-Agency Steering Group. This group aims to coordinate the management of climate and environmental risks to the financial sector, accelerate the growth of green and sustainable finance in Hong Kong, and support the government's climate strategies.

GBA integration for GSF opportunities

The credibility and transparency of ESG investment can be improved through the use of taxonomy, which is a system for precisely identifying the “green” and “socially responsible” characteristics of economic activities and financial assets. The taxonomy used in different regions includes different qualitative criteria and quantitative indicators, and the Common Ground Taxonomy (CGT) is a notable example that identifies commonalities and differences between the EU and China's green taxonomies. CGT currently focuses on substantial contribution criteria for climate change mitigation, but does not cover other environmental objectives.

International banks in the Mainland are currently using CGT when issuing green loans, and as more countries and regions adopt CGT as the basis for their green classification frameworks, the application of CGT will become more widespread. If companies in the GBA issue green bonds that have applied CGT and place them in the Hong Kong capital market, they can easily explain the products to international investors in Hong Kong.

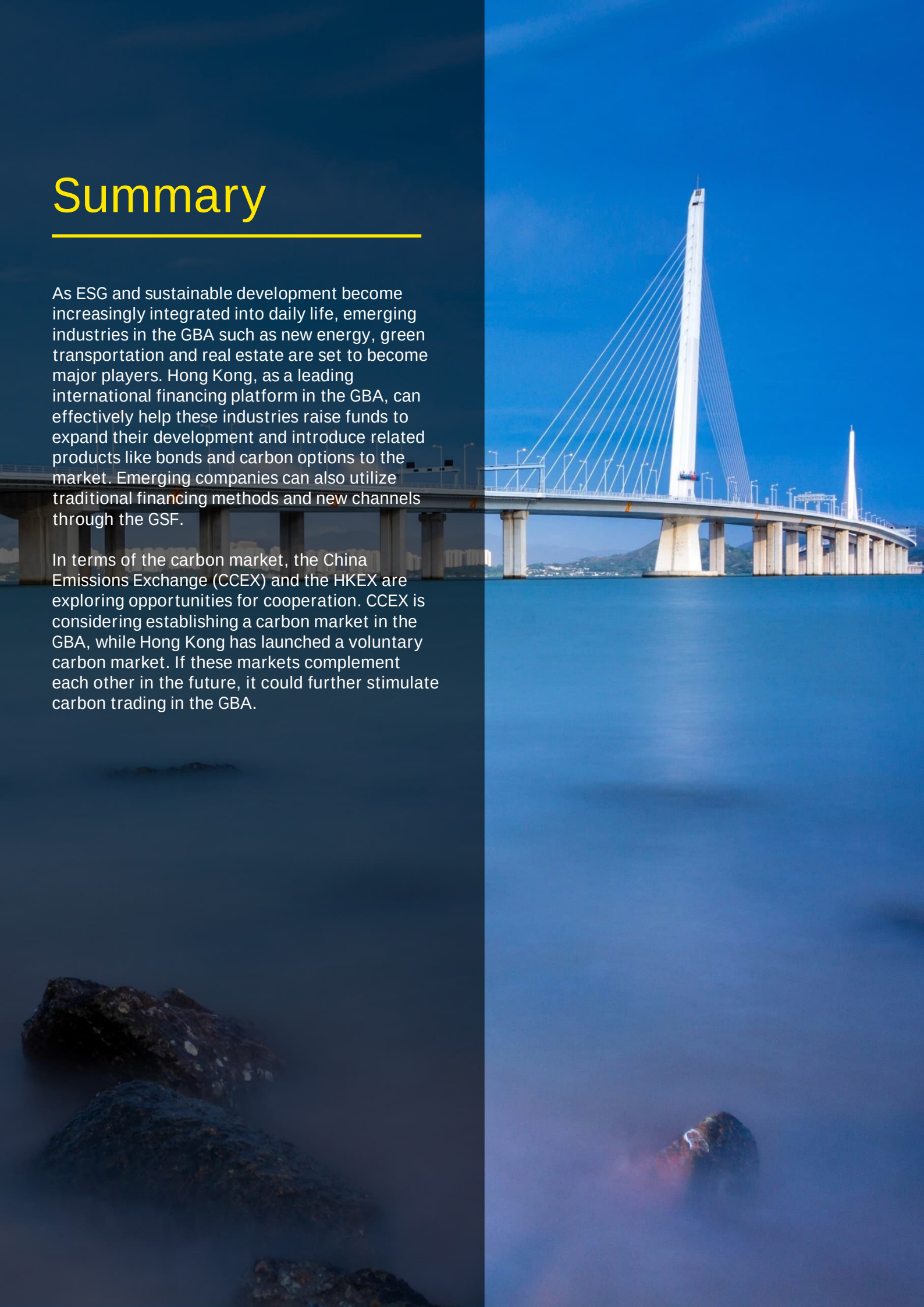
To connect capital with climate-related products and opportunities in Hong Kong, the Chinese mainland and beyond, the HKEX has launched a carbon marketplace called Core Climate. This platform provides trading, custody and settlement services for corporates, investors and project owners across the climate value chain, and helps to mobilize investment in new climate projects, technologies and business models.

58. Pivot GSF Capacity Building Support Scheme, https://www.greentalent.org.hk/

Summary

As ESG and sustainable development become increasingly integrated into daily life, emerging industries in the GBA such as new energy, green transportation and real estate are set to become major players. Hong Kong, as a leading international financing platform in the GBA, can effectively help these industries raise funds to expand their development and introduce related products like bonds and carbon options to the market. Emerging companies can also utilize traditional financing methods and new channels through the GSF.

In terms of the carbon market, the China Emissions Exchange (CCEX) and the HKEX are exploring opportunities for cooperation. CCEX is considering establishing a carbon market in the GBA, while Hong Kong has launched a voluntary carbon market. If these markets complement each other in the future, it could further stimulate carbon trading in the GBA.



ESG Connect

Hong Kong and Macau

Ee Sin Tan
Partner
Climate Change and Sustainability Services
Ernst & Young
+852 2629 3917
ee-sin.tan@hk.ey.com

China South

Andy Leung
Partner
Tax
Ernst & Young (China) Advisory Limited
+86 755 2502 8386
andy-sy.leung@cn.ey.com

EY | Building a better working world

EY exists to build a better working world, helping to create long-term value for clients, people and society and build trust in the capital markets.

Enabled by data and technology, diverse EY teams in over 150 countries provide trust through assurance and help clients grow, transform and operate.

Working across assurance, consulting, law, strategy, tax and transactions, EY teams ask better questions to find new answers for the complex issues facing our world today.

APAC no. 03016209
ED None

ey.com/china

Follow us on WeChat
Scan the QR code and stay up-to-date with the latest EY news.