

# Innovation & Technology

## Overview

With opportunities brought by the National 14th Five-Year Plan and the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), Hong Kong can capitalise on its advantages in research and development (R&D) capabilities, technology infrastructure, legal system and intellectual property to act as a strategic bridge for innovative companies looking to access the Mainland market, thereby developing into an international innovation and technology (I&T) centre.

The Hong Kong Special Administrative Region Government (HKSAR Government) promulgated the Hong Kong Innovation and Technology Development Blueprint in December 2022 to establish a clear development path and formulate systematic strategic planning for Hong Kong's I&T development over the next five to 10 years, charting Hong Kong in moving full steam towards the vision of an international I&T centre. The Government has formulated the Blueprint from the perspective of top-level planning and design, and will take forward the Blueprint under four broad development directions, namely "to enhance the I&T ecosystem and promote 'new industrialisation' in Hong Kong"; "to enlarge the I&T talent pool to create strong impetus for growth"; "to promote digital economy development and develop Hong Kong into a smart city"; and "to proactively integrate into the overall development of the country and consolidate our role as a bridge connecting the Mainland and the world".

## I&T stakeholders

- **Hong Kong Science Park** is home to over 1,000 I&T companies, providing them with infrastructural and one-stop support.
- **Cyberport** is a creative digital community with over 1,900 start-ups and technology companies.
- **Hong Kong Science and Technology Parks Corporation** (HKSTPC) has set up a subsidiary company – Hong Kong-Shenzhen Innovation and Technology Park Limited – to build, operate, maintain and manage the Hong Kong-Shenzhen Innovation and Technology Park (HSITP) in Lok Ma Chau Loop (Loop).
- Five research centres established by the Government, namely the **Automotive Platforms and Application Systems R&D Centre**, **Hong Kong Applied Science and Technology Research Institute**, **Hong Kong Research Institute of Textiles and Apparel**, **Logistics and Supply Chain MultiTech R&D Centre**, and **Nano and Advanced Materials Institute**, drive applied R&D in selected focus areas and foster commercialisation of R&D outcomes and technology transfer.
- The **Hong Kong Academy of Sciences** and the **Hong Kong Young Academy of Sciences** advise the Government on research and technology-related policies.
- The **Massachusetts Institute of Technology** set up its first overseas Innovation Node in Hong Kong in 2016.
- **Karolinska Institutet** (Sweden) opened a research facility at the Hong Kong Science Park in 2016 to strengthen research into regenerative medicine.
- **Hong Kong-Mainland collaboration**: There are currently 16 State Key Laboratories in Hong Kong and six Hong Kong Branches of Chinese National Engineering Research Centres. The

Innovation and Technology Commission has doubled the maximum annual funding for these institutions to \$440 million starting from 2022-23 financial year to strengthen support for R&D activities and promote further co-operation and exchanges with overseas and Mainland institutions.

- The **Ministry of Science and Technology (MOST)** and the HKSAR Government launched the Mainland-Hong Kong Joint Funding Scheme in April 2019 to support and encourage R&D collaboration in Hong Kong and the Mainland. In March 2023, the MOST and the HKSAR Government signed the "Mainland and Hong Kong Arrangement on Accelerating the Development of Hong Kong into International Innovation and Technology Centre".
- The **Chinese Academy of Sciences (CAS)** and the HKSAR Government signed the "Memorandum of Understanding on Establishing Affiliated Institution by the CAS in Hong Kong" in November 2018. The Hong Kong Institute of Science & Innovation, CAS Limited was set up in Hong Kong in April 2019 to promote the development of scientific research, technological innovation and education.

### **Digital economy**

To speed up the process of digital economy development in Hong Kong, **the Digital Economy Development Committee** is undertaking in-depth studies on four major areas to explore, namely the digital infrastructure needed to promote the development of digital economy, cross-boundary data transfer in a convenient, efficient and secure manner, digital transformation of enterprises and human resources support.

- As adequate computing infrastructure is a prerequisite for promoting the development of scientific research and artificial intelligence (AI) industries in Hong Kong, a feasibility study on the development of an **AI Supercomputing Centre** will be completed in 2023-24.
- Allocate about **\$200 million to enhance the operation of the "iAM Smart" platform** to provide the public with more convenient one-stop digital services and improve user experience. The wider use of "iAM Smart" will further promote **Smart Government** and digital transformation of the society.
- To further expedite the pace of digital transformation of enterprises, \$500 million will be allocated to Cyberport to launch a **Digital Transformation Support Pilot Programme**, under which subsidies will be provided on a one-to-one matching basis to assist small and medium enterprises (SMEs) adopt ready-to-use basic digital solutions and to help their digitalisation.
- The **Technology Voucher Programme**, which is widely received by industries, has supported over 21,000 applications since launch so that they can use technologies to enhance productivity and upgrade or transform their business processes.
- The Hong Kong Productivity Council's **Biz Expands Easy** launched in September 2022 one-stop online platform helps enterprises develop and/or upgrade digital support facilities by consolidating information of relevant government funding schemes to facilitate their research of funding schemes to support business development.

### **I&T infrastructure**

- Provide new land mainly for I&T development from the Ma Liu Shui reclamation project and the relocation of the Sha Tin Sewage Treatment Works to caverns.
- Move full steam ahead with the construction of the **HSITP** in the Lok Ma Chau Loop. The construction works of the first three buildings in the HSITP have commenced and are expected to be completed in phases starting from the end of 2024 as scheduled.

- Moving ahead with the construction the HSITP and areas around Lok Ma Chau/San Tin to form the **San Tin Technopole** in the Northern Metropolis which, together with the Shenzhen Innovation & Technology Zone (SZ I&T Zone), will form the **Shenzhen-Hong Kong Innovation & Technology Co-operation Zone**.
- Hong Kong and Shenzhen are taking forward the joint development of the Shenzhen-Hong Kong Innovation & Technology Co-operation Zone, comprising of the HSITP and the SZ I&T Zone, to establish the "one zone, two parks" initiative under the auspices of "one country, two systems".
- The HKSTPC set up **InnoAcademy of the GBA** in July 2022 to serve as a resource centre, training hub, and exchange platform for talent.
- The HKSTPC also set up **InnoExpress of the GBA** in July 2022 to nurture start-up and provide business development support for Hong Kong and Mainland I&T enterprises. The Shenzhen branch of HKSP is expected to commence operation in the first half of 2023.
- Hong Kong is a leading digital economy, consistently achieving top rankings in digital readiness and Internet access capabilities. Hong Kong has **12 submarine cable systems** and operates **nine satellites** for external communications. Several submarine cable systems will be ready in the coming years, enhancing the city's connectivity with other parts of the world.
- The **Re-industrialisation Funding Scheme** was launched in 2020 to subsidise manufacturers, on a matching basis, to set up smart production lines in Hong Kong. The Government aims to increase the cumulative number of funded smart production lines to over 130 in five years.
- The **Commissioner for Industry, a new post**, will be created to co-ordinate and steer re-industrialisation and help the manufacturing sector upgrade and transform with I&T.
- The **Advanced Manufacturing Centre (AMC)** in the Tseung Kwan O InnoPark commenced operation in 2022, providing a gross floor area of about 108,600 square metres for accommodating high value-added manufacturing. The HKSTPC is conducting a technical feasibility study on the setting up of the second AMC.
- The HKSTPC is developing the **Microelectronics Centre** in the Yuen Long InnoPark, which is expected to commence operation in 2024.
- The **Data Technology Hub** in Tseung Kwan O commenced operation, providing a purpose-designed infrastructure for the data technology and telecommunications services industry.
- The **expansion works of the Science Park and Cyberport** will be completed in phases from 2025 onwards, providing 100,000 square metres of additional floor area.
- To incentivise collaboration among industry, academic and research sectors to further promote the "from 1 to N" transformation of R&D outcomes and the industry development, the \$10 billion "**Research, Academic and Industry Sectors One-plus Scheme**" (**RAISe+ Scheme**) is expected to be launched and start receiving applications in 2023. The RAISe+ Scheme will fund, on a matching basis, at least 100 university research teams with potential to become successful start-ups.
- **Promote the development of technology industry by collaborating with the Office for Attracting Strategic Enterprises (OASES)** and making use of the \$5 billion **Strategic Tech Fund** as well as the land and space provided for I&T use starting from 2024 in the HSITP, to attract high-quality enterprises and talents to Hong Kong, primarily focusing on life and health technology, artificial intelligence and data science, advanced manufacturing and new energy technology. We aim to **attract not less than 100 high-potential or representative I&T enterprises** to set up or expand their businesses in Hong Kong in the coming five years, including at least 20 top-notch I&T enterprises,

bringing more than \$10 billion of investment to Hong Kong and creating thousands of local job opportunities.

- Explore the development of cavern data centres for effective use of land resources and utilisation of the edge of cavern space to support I&T development.

### **Promoting R&D**

- Facilitate effective cross-boundary flow of innovative elements: On funding, universities and research institutions in Hong Kong can apply for Mainland science and technology funding for use in Hong Kong. This policy allowing cross-boundary remittance of research funding injects further impetus into Hong Kong's research sector. Up to December 2022, the MOST, the National Natural Science Foundation of China, the Department of Science and Technology of Guangdong Province, the Science and Technology Bureau of Guangzhou Municipality, the Science, Technology and Innovation Commission of Shenzhen Municipality and other Mainland provinces and cities have approved about RMB 750 million for universities and research institutes in Hong Kong to conduct R&D or set up laboratories. In addition, upon meeting specific requirements, branches established by Hong Kong's universities and scientific research institutions in the Mainland would be allowed to lodge applications for exporting human genetic resources to Hong Kong for research purpose independently under a trial scheme.
- Two **InnoHK research clusters** have been set up at the Hong Kong Science Park, namely Health@InnoHK focusing on healthcare technologies, and AIR@InnoHK, focusing on artificial intelligence (AI) and robotics technologies. 28 research laboratories under InnoHK have commenced operation, involving seven local universities and research institutions as well as over 30 institutions from 11 economies.
- Set aside \$10 billion to further promote development of life and health technology and set up an **InnoLife Healthtech Hub** in the HSITP. To enhance support for the transformation of R&D outcomes as well as R&D activities related to life and health technology, \$6 billion out of the above provision will be allocated to provide subsidies for universities and research institutes to set up thematic research centres to foster cross university, cross-institutional and multi-disciplinary co-operation.
- Launched in 2020, the inaugural City I&T Grand Challenge received more than 740 submissions to tackle problems facing the city and people in their daily lives. 25 winners from the University/Tertiary Institute and Open Groups received financial resources for research and development. After training and continuous refinement of their I&T solutions, the winning teams have created prototypes for trials at over 50 organisations and community groups, involving more than 4,260 end users. Prototypes of winning solutions were revealed to the public for the first time through real-life scenarios at the inaugural City I&T Grand Challenge: The Showcase in October 2022. prototypes developed by the winning teams were revealed to the public for trial through real-life scenarios for the first time.
- Local R&D innovations have made a substantial contribution to the battle against COVID-19, address livelihood needs and commercialise efforts.
- To further enhance basic research in frontier technology fields such as **AI and quantum technology** and to better realise Hong Kong's basic technology research capabilities in making breakthroughs out of the blue, the 2023-24 budget earmarked \$3 billion to develop facilities to leverage Hong Kong's unique advantage as a platform for

international scientific research collaboration and attract leading I&T talents, research teams and enterprises from the Mainland and overseas to Hong Kong.

- **A Microelectronics Research and Development Institute** will be established to promote microelectronics development in Hong Kong, aiming to make it one of the leading organisations for supporting microelectronics development in the Asia-Pacific region. The Institute will strengthen collaboration with universities, R&D centres and the industry and expedite the "1 to N" transformation of technological outcomes. This will help pool together Mainland and overseas talents in relevant fields and strengthen the nurturing of local R&D talents, thereby further enhancing the I&T ecosystem.
- Advanced manufacturing activities generate R&D demand and encourage private enterprises to invest more resources in R&D work, thereby supporting Hong Kong's efforts to develop into an international I&T centre. The **Advanced Manufacturing Centre (AMC)** in the Tseung Kwan O InnoPark, which opened in April 2022, provides advanced manufacturing space of about 110,000 square metres. Tenants include enterprises engaging in the manufacturing of medical suppliers, civilian satellites, smart security products and advanced materials as well as providing smart logistics related services. To attract strategic enterprises to establish a presence in Hong Kong and **promote new industrialisation**, the Government plans to provide more advanced manufacturing space, including to support the setting up of the second AMC, on which the HKSTPC is currently conducting a feasibility study.

### **Nurturing and pooling talents**

- **The Global STEM Professorship Scheme** attracts more world renowned scholars to engage in I&T-related teaching and research activities in Hong Kong.
- The **Research Talent Hub** provides funding support to each eligible company or organisation to engage up to four research talents to conduct R&D work. Since April 2023, subsidies have been increased by about 10%, and research talents with a doctoral degree will also be provided with a living allowance.
- The **Technology Talent Admission Scheme (TECHTAS)**, which provides a fast-track arrangement for admitting technology talent from the Mainland and overseas to work on R&D in Hong Kong, was further enhanced in December 2022 by lifting the local employment requirement, extending the quota validity period to two years and expanding the coverage to more emerging technology areas.
- The **STEM Internship Scheme** provides allowance to undergraduates and postgraduates taking STEM (science, technology, engineering and mathematics)-related programmes in local universities to enroll in short-term I&T-related internships. The scheme will be expanded to cover university students studying STEM-related programmes at GBA campuses established by designated local universities. Besides, the five government-funded R&D centres and the Hong Kong Productivity Council will offer internship opportunities to STEM students of local and non-local universities.
- The **Innovation and Technology Scholarship** subsidises university students to take part in overseas/Mainland attachment programmes, local internships, mentorship programmes, etc.
- The \$500 million **IT Innovation Lab in Secondary Schools Programme** and \$200 million **"Knowing More About IT" Programme** provide funding support to all publicly funded secondary and primary schools respectively to nurture an IT learning atmosphere among students and cultivate their interest in IT by organising IT-related extra-curricular activities. The 2023-24

budget allocated an additional \$300 million to continue providing subsidies of up to \$1 million for each publicly-funded secondary school in the next three academic years to organise IT-related extra-curricular activities.

- The **GBA Youth Employment Scheme** assists Hong Kong youth who aspire to the I&T sector develop their careers in the GBA.
- The **Re-industrialisation and Technology Training Programme** provides funding support to local enterprises on a 2(Government):1(enterprise) matching basis to train their staff in advanced technologies, especially those related to “Industry 4.0”.
- Collaborating with the OASES to **attract leading I&T talents around the world**, and providing special facilitation measures to bring their business or R&D outcomes to Hong Kong.
- **More accommodation facilities will be built for I&T talents**, including a potential new InnoCell near Science Park and accommodation facilities at the HSITP.
- Permit flexible planning to provide **additional accommodation for I&T talents at San Tin Technopole**.

### **Supporting start-ups**

- **3,985 start-ups** in Hong Kong in 2022 (up 52% over 2018), and **14,932 start-up jobs** (up 56% over 2018) according to the 2022 start-up survey by InvestHK.
- \$2 billion **Innovation and Technology Venture Fund** (ITVF) set up by the Government to co-invest on a matching basis with selected private venture capital funds in I&T start-ups in Hong Kong. As at end March 2023, the ITVF has invested about \$207 million in 27 local I&T start-ups and attracted over \$2.1 billion in private investment.
- Set up a \$5 billion **Strategic Tech Fund** to invest in enterprises with good development potential to enrich the I&T ecosystem in Hong Kong.
- **Private sector**: Alibaba Group launched a \$1 billion Hong Kong Entrepreneurs Fund; Sequoia Capital initiated the Hong Kong X-Tech Startup Platform.
- **Cyberport: Cyberport Incubation Programme** and \$200 million **Cyberport Macro Fund** (CMF) to provide initial venture capital funding support for start-ups to scale up and accelerate their progress. Cyberport has injected an additional \$200 million into the CMF in April 2021 and extended its scope to cover Series B and later stage investments. As at end February 2023, CMF has invested more than \$180 million in 25 companies, attracting over \$1.58 billion private investment.
- \$265 million will be earmarked for Cyberport to launch a dedicated incubation programme for smart living startups, under which a maximum grant of \$500,000 as well as targeted professional support and counselling will be provided. It is anticipated that about 90 eligible startups will benefit from the programme in each of the next five years from 2023-24.
- The **HKSTPC** has invested over \$326 million in 27 technology start-ups through its **Corporate Venture Fund**, attracting over \$5.9 billion private investment. \$350 million has been injected into the fund to extend its scope to cover Series B and later stage investments. HKSTPC will further inject \$400 million into its Corporate Venture Fund to help more technology start-ups with potential.
- HKSTPC will consolidate its existing Acceleration Programme and inject an additional amount of \$110 million to launch the **Co-acceleration Programme** in collaboration with cooperate partners to support the growth of technology start-ups with high potential into regional or global enterprises.
- The HKSTPC implemented “**Incubation Programme**”, “**Incu-Bio Programme**” and a pre-incubation programme “**IDEATION**” to support I&T companies at different stages of development.

- The **InnoCell**, adjacent to Hong Kong Science Park, has been completed. It provides about 500 residential units with ancillary facilities to foster the development of the I&T ecosystem in Hong Kong. Successful applicants have been gradually moving in from mid-June 2021.
- The **Technology Start-up Support Scheme for Universities** provides an annual subsidy amount of \$16 million to each participating university to support their teams in starting technology businesses and commercialising their research and development results. Half of the subsidy is provided to start-ups of universities with private investments on a matching basis of one to one.
- The **Technology Voucher Programme** provides funding support to assist local enterprises and organisations in using technological services and solutions to improve productivity, or upgrade or transform their business processes.
- The **Public Sector Trial Scheme** provides funding support to assist eligible local technology companies and organisations in realising and commercialising their R&D outcomes and encourages public sector organisations to utilise more local R&D outcomes.
- The **E&M InnoPortal** lists the service wishes of various government departments, public organisations and the E&M trades, and invites the I&T sector, including start-ups and universities to propose relevant I&T solutions for matching.
- The **Smart Government Innovation Lab** promotes pro-innovation government procurement policy and expedite government bureaux and departments' adoption of innovative IT products and solutions, thereby improving public services and creating more business opportunities for local start-ups and SMEs.

### **Smart city**

- **Hong Kong Smart City Blueprint 2.0:** more than 130 initiatives categorised under major areas, namely "Smart Mobility", "Smart Living", "Smart Environment", "Smart People", "Smart Government", "Smart Economy", "Use of I&T in Combating COVID-19" and "Smart Village Pilots", to bring benefits and convenience to members of the public in their daily lives.
- **Smart City key infrastructure projects:** "iAM Smart" platform (offering over 270 commonly used public and commercial online services as at April 2023); smart lampposts; Next Generation GovCloud; Big Data Analytics Platform and Shared Blockchain Platform.
- **5G network**, which now covers over 90% of Hong Kong, will be expanded by amending legislation to ensure that appropriate space is made available in new buildings for mobile communication facilities.
- To encourage the telecommunications industry to more actively invest in infrastructure and provide better communication services to companies and the public, a tax deduction will be offered on spectrum utilisation fees to be paid by successful bidders of radio spectrum.
- Complete **e-government audit** for all government departments and use advanced information technology to **implement 100 new digital government initiatives by 2025** with a view to accelerating digital government development and providing more convenient public services.
- Aim to turn all government services online by 2024 and provide one-stop digital services by fully adopting "iAM Smart" by 2025 to realise **a single portal for online government services.**
- Providing funding support, through the \$1 billion Smart Traffic Fund, to local institutions and enterprises for conducting research and application of technology to enhance commuting convenience and efficiency of road network or space, and improve driving safety.
- \$100 million has been allocated to develop an **integrated digital platform** for data integration and information exchange of all public works projects.

- **The Geospatial Lab**, established in May 2021, helps raise public interest in spatial data, and explores together with the community value and application of spatial data in support of smart city development.
- The Government will continue to **open up data** and encourage public and private organisations to follow suit for innovative industry applications. Explore arrangements for the flow of data from the Mainland to Hong Kong to **jointly promote co-ordinated development of smart cities in the GBA**.
- **Wi-Fi Connected City** programme: to continue promoting the common brand “Wi-Fi.HK” and encourage more public and private organisations to participate in the programme. There are currently more than 47,000 “Wi-Fi.HK” hotspots in Hong Kong.
- **Asia-Pacific No.3 and World No.9** for digital competitiveness (International Institute for Management Development (IMD): World Digital Competitiveness Ranking 2022).
- **World No.4 and Asia-Pacific No.2** data centre market (Cushman & Wakefield: 2023 Global Data Center Market Comparison).
- **World No.1** lowest taxed data centre market (Cushman & Wakefield: 2023 Global Data Center Market Comparison).
- **World No.10 and Asia-Pacific No.2** hub for development of new technology (Smart Centres Index by UK-based Z/Yen released in May 2023).
- **Asia-Pacific No.2 and World No.3** for digital intelligence (Digital Intelligence Index 2020 compiled by US-based The Fletcher School at Tufts University and Mastercard).
- **South East Asia & Oceania No.5 and World No.14** for innovation performance World Intellectual Property Organization: Global Innovation Index 2022).
- **World No.19** smart city (IMD: Smart City Index 2023).

## Fintech

- Over **800 fintech companies** operating in Hong Kong; around **\$14 billion (US\$1.8 billion)** raised between **2019 and 2021**.
- Policy Statement on Virtual Assets Development announced in October 2022.
- Major fintech infrastructure includes the **Faster Payment System** with over 11.93 million registrations as at the end of March 2023; the average daily turnover reached 1.18 million real-time transactions (worth \$8.3 billion) in March 2023.
- **Granted licenses for 8 virtual banks, 4 virtual insurers, 2 virtual asset trading platforms and 17 stored value facilities**. An **Open Application Programming Interface (Open API) Framework** for the banking sector being implemented in phases, while the Open API Framework for the insurance sector is under preliminary consultation.
- **Fintech Proof-of-Concept Subsidy Scheme** provides financial incentives for financial institutions to partner up with fintech companies to conduct Proof-of-Concept trials.
- **Regulatory sandboxes** available in the Hong Kong Monetary Authority (HKMA), the Securities and Futures Commission and the Insurance Authority.
- **InvestHK’s dedicated fintech team** provides one-stop service for overseas and Mainland fintech companies to set up in Hong Kong; and organises a series of Fintech events over the year, including the annual flagship **Hong Kong Fintech Week**.
- **Commercial Data Interchange (CDI)** is a consent-based financial data infrastructure for enterprises to share operational data, enabling banks to make accurate assessments on the operating condition of enterprises and provide SMEs with a better chance of securing loans. As of



March 2023, it was estimated that CDI had facilitated the approval of more than 2,300 loans, amounting to about HK\$2.1 billion, since its production launch in October 2022.

- The HKMA is **laying the groundwork for the potential implementation of e-HKD** by adopting a three-rail approach and collaborating with Mainland institutions on **the testing of "e-CNY"** as a cross-boundary payment facility in Hong Kong, taking forward more cross-boundary Fintech projects.

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