

Chapter 16

Innovation, Technology and Industry

The National 14th Five-Year Plan supports Hong Kong's development into an international innovation and technology centre. To realise this vision, Hong Kong attracts top-notch overseas and Mainland research institutions with its strong research capability, robust intellectual property protection regime, world-class technological infrastructure and the opportunities presented by national development.

The Innovation, Technology and Industry Bureau formulates innovation and technology (I&T) policies in Hong Kong. The bureau is supported by the Innovation and Technology Commission, the Office of the Government Chief Information Officer and the Efficiency Office.

The Innovation and Technology Commission promotes and supports applied research and development (R&D) and technology transfer and applications. It also promotes internationally accepted standards and conformity assessment services to underpin technological development and international trade in Hong Kong.

The Office of the Government Chief Information Officer provides information technology (IT) governance policy and support within the government, and promotes the wider adoption of IT in the community. It also seeks to develop a vibrant information and communications technology (ICT) industry and promote high-tier data centres, smart city development and cyber security awareness in Hong Kong.

The Efficiency Office, through its role as internal management consultant, supports government agencies in taking forward initiatives through the application of technology and innovation in business processes. It accelerates innovation to improve services and operations across the government and promotes cross-sectoral collaboration between the government and stakeholders to design and implement better services for the community.

As announced in the 2023 Policy Address, the Office of the Government Chief Information Officer and the Efficiency Office will merge to form the Digital Policy Office, which will spearhead policies and initiatives on promoting IT, data governance and digital government.

Leveraging Hong Kong's competitive edge, the government develops a high value-added and diversified economy which embraces the development of new economic sectors. The government also encourages industry participation to capitalise on opportunities emerging from the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) development and the Belt and Road Initiative, in order to generate new impetus for the territory's economic development.

The Hong Kong I&T Development Blueprint sets out the city's overall I&T development plan over the next five to 10 years under four broad directions and eight major strategies, covering enhancement of I&T ecosystem and new industrialisation; enlargement of the I&T talent pool; promotion of the development of digital economy and smart city; and integration of Hong Kong into the overall development of the country.

Infrastructure

Hong Kong Science and Technology Parks Corporation

The Hong Kong Science and Technology Parks Corporation (HKSTPC) is responsible for managing Hong Kong Science Park and the InnoCentre, and provides all-round support services to technology start-ups for promoting technology transfer and commercialisation of R&D results, as well as supporting the sustainable development of the I&T ecosystem in Hong Kong. The Hong Kong Science Park provides around 400,000 square metres of gross floor area for R&D activities and was home to about 1,200 companies as at end-2023. The total workforce was around 19,000, more than 13,000 of whom were researchers.

The HKSTPC is also responsible for managing three InnoParks in Tai Po, Yuen Long and Tseung Kwan O, which together provide 217 hectares of serviced land for I&T and manufacturing setups. Key projects in recent years include the Advanced Manufacturing Centre, Data Technology Hub and Microelectronics Centre.

Hong Kong-Shenzhen Innovation and Technology Park

The Hong Kong-Shenzhen Innovation and Technology Park Limited is a wholly owned subsidiary of the HKSTPC responsible for building, operating, maintaining and managing the superstructure of the Hong Kong-Shenzhen Innovation and Technology Park. The first batch of three buildings in the park will be completed by phases from end-2024 onwards.

San Tin Technopole

Together with the Hong Kong-Shenzhen Innovation and Technology Park, the San Tin Technopole, situated at the heart of the Northern Metropolis, provides around 300 hectares of I&T land. The bureau launched a study in 2023 to make recommendations on the uses of different land parcels, from the development of specific I&T uses to requisite supporting facilities, land disposal and operation modes.

Cyberport

Cyberport provides basic infrastructure and technical know-how to enhance the overall development of the ICT ecosystem. The Cyberport community consists of more than 2,000 ICT companies. Its campus provides 98,000 sq m of rental office area, including Smart-Space and other co-working areas used by more than 800 start-ups. Cyberport also offers incubation programmes, funding support for market development and accelerators, as well as venture capital investment.

As announced in the 2023 Policy Address, Cyberport will establish an artificial intelligence (AI) supercomputing centre in phases from 2024 to support the huge local demand for supercomputing power and promote AI industry development.

Hong Kong Productivity Council

The Hong Kong Productivity Council aims to help local enterprises adopt advanced technologies and production processes and increase productivity. It provides integrated support for their business operations in Hong Kong and on the Mainland, focusing on manufacturing technologies, IT, environmental technologies and management systems. It also promotes new industrialisation and smart city development.

Research and Development Centres

The government has five R&D centres to drive and coordinate applied R&D and to promote the commercialisation of R&D results and technology transfer: 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. A sixth centre, the Hong Kong Microelectronics Research and Development Institute, will be established in 2024.

Hong Kong Council for Testing and Certification

The council advises the government on the overall development strategy of the testing and certification sector.

The Mainland has been opening up its market to Hong Kong's testing and certification sector through the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA). The council promotes the liberalisation measures under CEPA, helps the testing and certification sector explore opportunities in the GBA, and encourages manpower development in the sector.

Hong Kong Accreditation Service

The accreditation service operates according to international standards and is active in international and regional accreditation communities. It has mutual recognition arrangements with accreditation bodies in 117 economies, allowing the results of tests, calibrations, certifications, inspections, validations and verifications provided by its accredited organisations to be recognised globally, thus facilitating cross-border business.

Standards and Calibration Laboratory

The laboratory is Hong Kong's official custodian of physical measurement reference standards and provides calibration services traceable to the International System of Units. It represents Hong Kong, China as a signatory to the Mutual Recognition Arrangement of the International Committee for Weights and Measures, and its calibration certificates are recognised internationally. It also provides proficiency testing schemes for local testing and calibration laboratories to assess their technical competence.

Standards-related Services

The Quality Services Division under the Innovation and Technology Commission offers free technical advice on standards-related matters. It also represents the Hong Kong Special Administrative Region in major forums relating to standards and conformance issues and acts as Hong Kong, China's enquiry and notification point under the World Trade Organisation's Technical Barriers to Trade Agreement.

Innovation and Technology Development

R&D and Technology Transfer

Hong Kong's gross domestic expenditure on R&D (GERD) amounted to \$30.1 billion in 2022, and the ratio of GERD to Gross Domestic Product was 1.07 per cent.

The government offers tax deductions for R&D expenditure incurred on or after 1 April 2018. The deduction is 300 per cent for the first \$2 million of such expenditure and 200 per cent for the remaining balance. There is no cap on the amount of tax deduction. The total amount of R&D expenditure eligible to claim tax deduction for the year of assessment 2021-22 was about \$3.4 billion.

Sixteen State Key Laboratories and six branches of the Chinese National Engineering Research Centres in Hong Kong are recognised by the Ministry of Science and Technology. The

government doubled the maximum annual funding to \$20 million for each of these institutions starting from the 2022-23 financial year. It also provides up to \$8 million a year for the Technology Transfer Office of each designated university¹, which will be doubled to \$16 million from the 2024-25 financial year.

The Innovation and Technology Fund assists in upgrading technology and promoting innovation in manufacturing and services. In 2023, it committed over \$7 billion to supporting over 21,000 projects undertaken by research institutions and the industry, ranging from R&D and subsidising enterprises to adopt I&T and introduce smart production lines, to promoting I&T culture. Over 430 were R&D projects with total funding exceeding \$1.1 billion. Research funding also comes from the University Grants Committee and Research Grants Council, which provided \$7.44 billion in the 2022-23 academic year.

The Innovation Hub@HK website showcases the R&D outcomes of Hong Kong universities and research institutes. The website provides a one-stop platform to connect universities, research institutes and the industry to facilitate commercialisation and technology transfer of R&D outcomes.

InnoHK Research Clusters

To promote global research collaboration, the government has allocated \$10 billion to the InnoHK initiative. Two research clusters have been set up at Hong Kong Science Park, namely Health@InnoHK, focusing on healthcare technologies, and AIR@InnoHK, focusing on AI and robotics technologies. InnoHK has collaborated with more than 30 world-renowned universities and research institutions from 11 economies and established 29 research laboratories.

Start-ups

In 2023, Hong Kong ranked second in the world and first in Asia on the Emerging Ecosystems ranking in the Global Startup Ecosystem Report. According to an Invest Hong Kong survey, the number of start-ups increased to nearly 4,300 in 2023, up by over 30 per cent compared with 2019.

The Innovation and Technology Venture Fund encourages venture capital funds to co-invest with the government in local I&T start-ups. As at end-2023, the fund had invested \$210 million in 28 local I&T start-ups and attracted over \$2.1 billion in private investment. The HKSTPC's Corporate Venture Fund and the Cyberport Macro Fund co-invest with angel investors or venture capital funds in start-ups supported by Hong Kong Science Park and Cyberport respectively.

The Technology Start-up Support Scheme for Universities supports teams from six local universities² to start technology businesses and commercialise their R&D results. The annual funding for each university is up to \$16 million. As at end-2023, around \$400 million had been

¹ The designated universities are City University of Hong Kong, Hong Kong Baptist University, the Chinese University of Hong Kong, the Education University of Hong Kong, the Hong Kong Polytechnic University, the Hong Kong University of Science and Technology, and the University of Hong Kong. Lingnan University will be included from the 2024-25 financial year.

² City University of Hong Kong, Hong Kong Baptist University, the Chinese University of Hong Kong, the Hong Kong Polytechnic University, the Hong Kong University of Science and Technology, and the University of Hong Kong.

approved for 478 start-ups, which had derived over 1,900 intellectual property rights from their R&D. About 250 start-ups had taken their products or services to market and over 280 had received funding injections.

The government launched the \$10 billion Research, Academic and Industry Sectors One-plus Scheme in October to promote the transformation and commercialisation of R&D outcomes from universities. The scheme funds, on a matching basis, at least 100 research teams from universities with the potential to become successful start-ups to complete their projects in two stages within around five years. Funding support from \$10 million to \$100 million will be provided to each approved project.

Pooling and Nurturing Talent

The government aims to expand Hong Kong's I&T talent pool by nurturing, retaining and attracting talent, with relevant initiatives spanning across different lifestages.

The IT Innovation Lab in Secondary Schools and Knowing More About IT programmes subsidise secondary and primary schools respectively to organise extra-curricular IT activities. As at end-2023, some 900 schools joined the programmes with approved funding of more than \$500 million.

The STEM Internship Scheme encourages students of science, technology, engineering and mathematics (STEM) at eligible universities to undertake short-term full-time internships related to I&T. As at end-2023, the scheme had supported over 12,000 internship opportunities.

The Research Talent Hub funds each eligible organisation or R&D project to engage up to four graduates for R&D work. As at end-2023, about \$5.7 billion had been used to fund over 12,300 positions.

The Global STEM Professorship Scheme helps local universities attract world-renowned I&T scholars and their teams to undertake teaching and research work in Hong Kong. As at end-2023, the scheme had supported nearly 90 scholars.

The Technology Talent Admission Scheme provides fast-track admission to Hong Kong for R&D talent. It was enhanced in December 2022 to lift the local employment requirement, extend the quota validity period to two years, and cover companies undertaking R&D activities in 14 technology areas. Since its launch in 2018 to end-2023, a total of 917 quotas had been allotted by the Innovation and Technology Commission.

Smart City and Digital Economy

The government published the Smart City Blueprint for Hong Kong 2.0 in 2020. More than 130 initiatives have been or are being implemented to make Hong Kong a more liveable smart city, covering smart mobility, smart living, smart environment, smart people, smart government, smart economy and smart village pilots.

The iAM Smart platform allows users to access more than 300 government, public and private organisation services with a single digital identity. As at end-2023, more than 2.5 million residents had registered as users.

The Digital Economy Development Committee looks into cross-boundary data flow, digital infrastructure, digital transformation and talent development and advises the government on strategies to develop the digital economy.

A memorandum of understanding was signed with the Cyberspace Administration of China in June to facilitate cross-boundary data flow within the GBA. The first facilitation measure was announced in December to provide a standard contract template for voluntary adoption and consent-based cross-boundary flow of personal data from the Mainland to Hong Kong.

To foster development of a digital economy and data-based smart city, a policy statement on facilitating data flow and safeguarding data security was promulgated in December to set out 18 action items for follow-up.

New Industrialisation

The Advanced Manufacturing Centre at Tseung Kwan O InnoPark provides a gross floor area of about 108,600 sq m for accommodating high value-added manufacturing processes. The Microelectronics Centre at Yuen Long InnoPark will be commissioned in 2024 for the newly established Hong Kong Microelectronics Research and Development Institute and other tenants to gradually move in. The HKSTPC is also studying the setting up of a second Advanced Manufacturing Centre.

The New Industrialisation Funding Scheme subsidises manufacturers on a matching basis to set up new smart production lines in Hong Kong. It funds one-third of the total project cost, or \$15 million, whichever is lower. As at end-2023, 35 applications had been supported with total funding of about \$258 million.

The New Industrialisation and Technology Training Programme subsidises local employees on a matching basis to receive training in advanced technologies. By end-2023, it had provided some \$600 million in funding for training over 25,900 people.

The New Industrialisation Development Office will be set up in 2024. The office will adopt an industry-oriented approach to promote new industrialisation in Hong Kong, support strategic enterprises to develop their businesses in Hong Kong, assist the manufacturing sector in upgrading and transformation by making use of I&T, and provide support for start-ups.

The \$10 billion New Industrialisation Acceleration Scheme will also be set up in 2024 to provide financial assistance for enterprises in the fields of life and health technologies, AI and data science, advanced manufacturing, and new energy technologies, so as to promote the downstream development of new industrialisation in Hong Kong.

Use of I&T in Government, Business and Community

The government is committed to digitalising all licences, services involving application and approval and forms by mid-2024. If in-person submission or collection of documents is required by law or international practice, applicants will only need to visit the government office concerned once. As at end-2023, of some 1,400 licences and government services, around 91 per cent involving applications and 78 per cent involving collection, had been digitalised. Around 3,400 government forms can be submitted online.

The government offers electronic payment options for government fees. As at end-2023, about 66 per cent of around 600 such items provided the public with a choice to settle payments both online and offline, including at service counters and self-help kiosks, through the Faster Payment System, with the remainder to be fully implemented by the third quarter of 2024.

The government releases data in machine-readable format on its data.gov.hk portal for free use. As at end-2023, there were over 5,300 open datasets on the portal, alongside more than 800 spatial datasets released on the Common Spatial Data Infrastructure Portal.

The TechConnect Block Vote supports the government to implement I&T projects to enhance operational efficiency and improve public services. As at end-2023, it had supported 136 projects proposed by 32 bureaus or departments.

As at end-2023, the Smart Government Innovation Lab had matched 103 business needs of departments with technology solutions and arranged proof-of-concept tests for 72 solutions with potentials. Among them, 43 projects were being planned for or under pilot implementation. The lab also advocated innovative applications with AI for pilot use in relevant departments to enhance the quality and efficiency of public services.

The government encourages the elderly to use ICT through a web-based learning portal, outreach programme, mobile outreach service stations and enriched ICT training. It also promotes accessible design of websites and mobile applications to benefit the disabled.

The Technology Voucher Programme supports local enterprises or organisations to adopt technological services and solutions to improve productivity or transform their business processes. As at end-2023, some 30,400 applications had been approved with around \$5.34 billion in funding.

The Social Innovation and Entrepreneurship Development Fund encourages social entrepreneurs to develop innovative ideas, products and services to address poverty and social exclusion and foster social cohesion through cross-sectoral collaboration. As at end-2023, 544 projects were funded and had benefitted more than 354,000 people.

The 22nd Asia Pacific ICT Alliance Awards was hosted in Hong Kong in December, gathering more than 600 ICT leaders and industry experts from 16 economies in Asia-Pacific to promote regional collaboration and foster ICT development.

Cooperation with Mainland

The National 14th Five-Year Plan supports Hong Kong's development into an international I&T centre and includes the Shenzhen-Hong Kong Loop as a major platform of cooperation in the GBA.

About RMB800 million of R&D funding has been approved for universities and research institutions in Hong Kong. The Ministry of Science and Technology has approved five Mainland branches established by Hong Kong universities to export human genetic resources to Hong Kong for research.

The Hong Kong and Shenzhen governments are jointly developing a cooperation zone, which comprises the Hong Kong-Shenzhen Innovation and Technology Park and the Shenzhen Innovation and Technology Zone, to establish 'one zone, two parks.' The first batch of tenants of the Shenzhen branch of the Hong Kong Science Park started to move in from June onwards.

The government promotes technological cooperation with the Mainland through regular mechanisms, including the Mainland/Hong Kong Science and Technology Cooperation Committee, and the Guangdong-Hong Kong Expert Group on Cooperation in Technology and Innovation.

The government is collaborating with the Guangdong Provincial Government to promote the Cross-boundary Public Services initiative. Thematic websites of Guangdong and Hong Kong were launched in early November, enabling residents and enterprises in Hong Kong and the Mainland cities of the GBA to access public services of the two places online without the need for cross-boundary travel.

Websites

Cross-boundary Public Services: www.crossboundaryservices.gov.hk

Cyberport: www.cyberport.com.hk

Efficiency Office: www.effo.gov.hk

Hong Kong Applied Science and Technology Research Institute: www.astri.org

Hong Kong Automotive Platforms and Application Systems R&D Centre: www.apas.hk

Hong Kong Council for Testing and Certification: www.hkctc.gov.hk

Hong Kong Productivity Council: www.hkpc.org

Hong Kong Research Institute of Textiles and Apparel: www.hkrita.com

Hong Kong Science and Technology Parks Corporation: www.hkstp.org

Hong Kong-Shenzhen Innovation and Technology Park: www.hsitp.org

iAM Smart: www.iamsmart.gov.hk

Innovation, Technology and Industry Bureau: www.itib.gov.hk

Innovation and Technology Commission: www.itc.gov.hk

InnoHK: www.innohk.gov.hk

Innovation Hub@HK: www.innovationhub.hk

Logistics and Supply Chain MultiTech R&D Centre: www.lscm.hk

Nano and Advanced Materials Institute: www.nami.org.hk

Office of the Government Chief Information Officer: www.ogcio.gov.hk

Public sector information portal: www.data.gov.hk

Smart City Blueprint for Hong Kong: www.smartcity.gov.hk