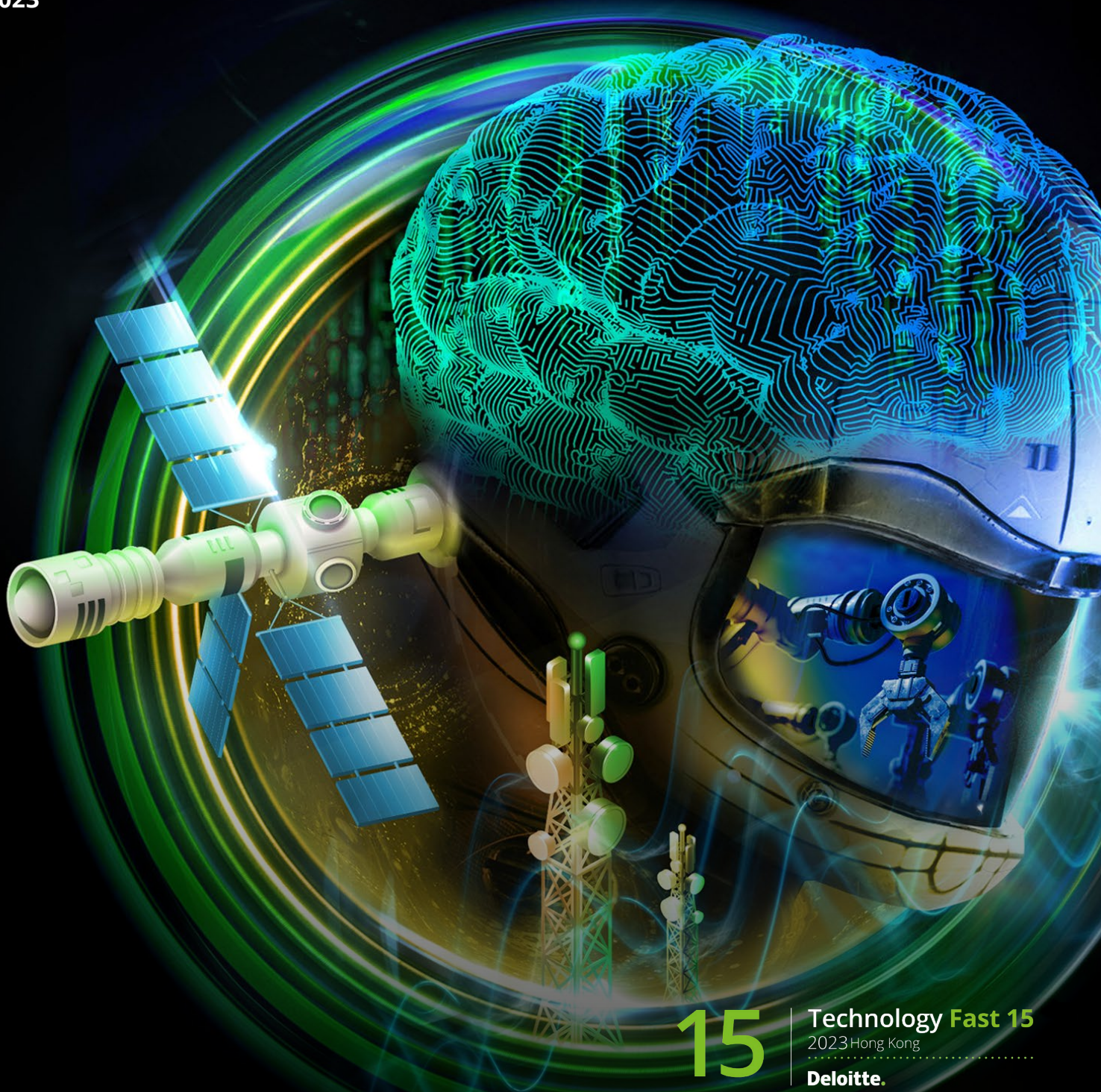


# Turning innovations into wealth: How to fill the commercialisation gap in Hong Kong

2023



**15**

**Technology Fast 15**  
2023 Hong Kong  
Deloitte.

# Foreword



## **Ms. CHEONG Man Lei, Lillian, JP**

Under Secretary for Innovation, Technology and Industry  
of the Hong Kong Special Administrative Region

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Hong Kong has fully demonstrated its resilience in weathering the pandemic in the past few years. Among the edges enjoyed by Hong Kong, innovation and technology (I&T) holds one of the keys for driving economic growth and hence enhancing the overall competitiveness of our society. In October 2023, the Chief Executive delivered the Policy Address, which gave further impetus to promote the development of Hong Kong into an international I&T centre.

In particular, to promote research and development (R&D) and transformation of results, the Policy Address announced (i) the establishment of the Hong Kong Microelectronics Research and Development Institute and the commissioning of the Microelectronics Centre, which will provide advanced infrastructure and hardware facilities designated for microelectronics, within this year; (ii) initiating preparations for the establishment of the third InnoHK research cluster focusing on advanced

manufacturing, materials, energy and sustainable development next year; (iii) doubling the maximum funding provided for the Technology Transfer Office of each specified university to HKD16 million in the coming year, as well as ; (iv) attracting more renowned Mainland and overseas start-up services agencies to set up their operations in Hong Kong for providing incubation services and development guidance. In addition, we officially launched the Research, Academic and Industry Sectors One-plus Scheme in October 2023, which aims to unleash potential of local universities in transformation and commercialisation of R&D outcomes, and facilitate relevant collaboration among the Government, industries, universities, and research.

The Government will endeavour to take forward these initiatives and propel the growth of Hong Kong's I&T industries into an ecosystem which could sustain scientific and technological innovation.



## Prof. Tam Kar Yan

Dean of Business and Management,  
Hong Kong University of Science and Technology

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With the four-pronged strategy for enhancing innovation and technology (I&T) development announced in the Policy Address, the Hong Kong SAR Government has set the stage for a new tipping point in the city's startup ecosystem. The strategy aims to foster a vibrant I&T ecosystem and promote re-industrialization, enlarge the I&T talent pool, transform Hong Kong into a smart city, and integrate with the national development.

Over the years, Local universities' strong support, together with their close industry collaboration in fostering tech innovation and business incubation, has boosted the Government's I&T drive. More and more students are choosing the entrepreneurship path after graduation, with many finding success in Hong Kong and overseas.

At HKUST, we equip students and alumni with the mindset and skillset to launch their startups and bridge the commercialization gap, empowering them to pursue their entrepreneurial dreams. We offer a minor in entrepreneurship program to guide students through identifying innovation opportunities, analyzing the industrial landscape and refining the business model for their future startup. Through entrepreneurship competitions, HKUST also provides opportunities for students to pitch their ideas and win seed money for their

startups. As business is about building teams and deploying resources efficiently to create value, we foster student-driven communities and offer co-working facilities for them to meet other like-minded peers who aspire to be the next entrepreneur.

Our School is also committed to advancing knowledge in areas that are vital for the future of the economy and society. We explore the potential of emerging fields that bridge business and technology, such as fintech, data analytics, and green finance. These fast-growing domains not only create growth opportunities for tech startups, but also become new catalysts for economic development.

We are delighted to be the knowledge partner of the 2023 Deloitte Hong Kong Technology Fast & Rising Star program. This prestigious program honors the achievements of fast-growing technology companies, and aligns with our efforts to foster entrepreneurship and advance tech applications in business.

By showcasing successful examples of tech startups, it also inspires I&T entrepreneurs to pursue their visions and create positive impacts for society.

Congratulations to all the Technology Fast 2023 Hong Kong winners!

# Preface



## Edward Au

Southern Region Managing Partner  
Deloitte China

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The 2023 Hong Kong Technology Fast (HKTF) and Rising Star award winners have once again shown remarkable resilience and growth, demonstrating exceptional innovation outcomes over recent years.

The Tech Fast winners, in response to changing market needs and conditions, have adeptly pivoted, showcasing vast potential for further scalability. Conversely, the Rising Star awardees characterised by their youthfulness and innovation, exhibit highly promising growth prospects within their respective industries.

Having engaged with the applicants and winners during the rigorous selection process, we have witnessed exciting growth opportunities in almost every domain of innovation and technology (I&T) in Hong Kong, spanning from artificial intelligence, cloud computing, digital engineering and robotics, to biotech, e-commerce, fintech, logistics and new materials. Undoubtedly, these advancements will augment the overall development of the industry in Hong Kong, driving it to new levels of sophistication.

However, as highlighted in this year's HKTF report, there exists untapped potential for Hong Kong's outstanding innovators to turn their ideas into commercial and financial success. This necessitates a concerted effort involving an enhanced combination of government and policy inputs, R&D initiatives, talent cultivation, educational enhancements, favourable funding conditions, and robust business support. Deloitte looks forward to witnessing the practical implementation of the insights outlined in the report, thereby dismantling barriers hindering the industrial and commercial success of Hong Kong's I&T companies.

We extend our gratitude to HSBC for its invaluable support as the Diamond Sponsor of HKTF and the research report. Additionally, we appreciate Hong Kong University of Science and Technology (HKUST) Business School, HKTF's Official Knowledge Partner, for its contribution to the survey and provision of insightful perspectives sharpening the report's content. Special thanks are also due to our Strategic Partners, Hong Kong Cyberport and Hong Kong Science and Technology Parks Corporation, and all the Supporting Organisations.

Together, we have formed a powerful innovation engine capable of propelling the outstanding innovations of Tech Fast and Rising Star winners towards sustainable profitability, fostering a thriving I&T ecosystem.

There is much reason for optimism, particularly since the introduction of the Hong Kong I&T Development Blueprint by the Hong Kong SAR Government in December 2022. Entrepreneurs now view local policies and incentives as advantages, a positive shift that bodes well for the entrepreneurial landscape in Hong Kong.

Deloitte remains committed to contribute resources towards achieving the goals outlined in the I&T Development Blueprint. This commitment includes continued investment in our Innovation & Assets Development Center (IADC) at Hong Kong Science Park and our pledge to double our Hong Kong Deloitte Digital headcount to exceed 1,000 tech and digital professionals by 2025.

Beyond the Blueprint, we will continue to play a pivotal role and be a “value-adder” in Hong Kong’s I&T ecosystem. This involves helping start-ups in accelerating R&D commercialisation, facilitating increased access to investment and funding, including venture capital and private equity, and inspiring local STEAM talent to embrace experimentation and innovation.

Furthermore, through the amalgamation of our deep industry knowledge, leading assets, and solutions with the resources of the Deloitte Global network and collaboration with alliance partners, we are poised to offer I&T companies comprehensive, integrated “Advise, Implement and Operate” services. Leveraging our established strengths in audit and assurance and tax advisory services, we will consistently strengthen the business operations of our I&T clients.

Heartfelt congratulations to all the 2023 HK Tech Fast and Rising Star winners!

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# Technology Fast Program



# Introduction

**For more than two decades, Deloitte has recognised the fastest-growing and most innovative enterprises across the technology ecosystem through the Technology Fast Program. The program provides annual ranking over 30 countries, celebrating innovative, rapidly growing companies around the world.**

The 2023 Deloitte Hong Kong Technology Fast (HKTF) ranks fast growing public and private technology companies on their revenue growth over the last three years.

HKTF is open to companies from the technology, life sciences and other new economy sectors. **Tech Fast** Companies must satisfy the following criteria:

- Three years of business operation
- Headquartered in Hong Kong
- At least HKD2,200,000 in operating revenue during the 1st year of the 3-year evaluation period
- Proprietary intellectual property or proprietary technology that generates substantial operating revenue

Four tech companies that have achieved outstanding growth and leadership status are awarded **Technology Fast Leadership** awards.

**Rising Star** is a special category that recognises high-growth companies that have demonstrated

astounding business growth but are too young to be listed in the Technology Fast ranking.

Two companies that have surpassed all expectations with their exceptional growth, visionary leadership and ground-breaking innovations are awarded **Rising Star Leadership** awards.

**Tech Fast Female** awards recognise companies with considerable business growth that were founded or cofounded by women.

HKTF is a sub-program of the Deloitte GBA Technology Fast 40 Program (GBA TF40) and Deloitte China Technology Fast 50 Program (China TF50). Notable winners of China TF50 include Tencent, Jingdong, Bytedance, Mare Medical, SMIC, WuXi AppTec, WeLab, Klook, SenseTime, Lalamove and Prenetics. Once an enterprise reaches HKTF, it automatically becomes eligible to enter GBA TF40 and China TF50 to compete with peers from every corner of the GBA and Chinese mainland.

Over the years, many companies named in the global Deloitte Technology Fast 50 (Global TF50) have emerged to become international technology giants, with notable winners including Apple, Microsoft, and Tesla. With most of its companies at their early growth stages when ranked, the TF50 can also be considered as the "Cradle of Rising Stars".



**Bong Chan**

Southern Region Leader  
China TMT Industry  
Deloitte China



**Philip Law**

Greater Bay Area/ Hong Kong Leader  
Technology Fast Program  
Venture Capital & Private Equity  
Deloitte China

# Technology Fast Leadership Winners

2023 Deloitte Hong Kong Technology Fast Leader



**#01**

Hardware

Growth rate  
**6643%**



**FJDynamics**

## FJ Dynamics International Limited

FJD is a robotics company focusing on digitisation, intelligence and new energy. Its technology has been widely used in different fields such as agriculture, construction, surveying and mapping, and service robots.

"We are committed to making useful and affordable robotic products for the most traditional labour-intensive industries, improving the efficiency and return of customers' operations while improving their working environment. With the global reach of our business, we are also excited to work with our partners and customers to build a better future for our world."

<https://www.fjdynamics.cn>



**#02**

Pharmaceuticals

Growth rate  
**6385%**

**G-NiiB  
GENIEBIOME**

## GenieBiome Limited

G-NiiB GenieBiome is a biotechnology company founded by world-renowned clinician-scientists and supported by a multidisciplinary team of specialists in microbiology, metagenomics, bioinformatics, disease biomarkers, food technology, clinical trials, IP development and commercialisation.

"For over a decade, our team has pioneered the use of microbiome with evidence-based science to tackle a myriad of diseases, including colorectal cancer, obesity, atopic eczema, autism and mood disorders, revolutionising the prevention, diagnosis and treatment of disease. Our precision portfolio of G-NiiB includes diagnostic and risk prediction tests, next-generation microbiome precision formula, and precision medicine tailored for the Asian population. Our vision is to be a game changer in human health with microbiome solutions."

<https://www.geniebiome.com>



**#03** *Bioscience*

Growth rate  
**5814%**

**PHASE**SCIENTIFIC

### PHASE Scientific International Limited

PHASE Scientific is a high-growth biotech company dedicated to inspiring a new state of health. The company's focus is on providing innovative diagnostic tools and services for cancer and infectious diseases. With an impressive portfolio of over 50 patents granted, the Company's core technology, PHASiFY™, addresses the challenges in low-concentration target molecule detection, providing an innovative way to improve the performance of diagnostic testing and make it faster, more accurate and more cost-effective.

Headquartered in Hong Kong with locations in the Greater Bay Area and Southern California, PHASE Scientific's mission is to empower individuals by ensuring access to the best health information, leading to better health decision-making.

 <https://www.phasescientific.com>



**#04** *Bioscience*

Growth rate  
**1253%**



### Insilico Medicine

**Insilico Medicine**

Insilico Medicine is a global, clinical stage, generative AI-driven biotechnology company responsible for advancing the novel generative AI-discovered and designed candidates for human clinical trials. The company's integrated Pharma.AI platform spans biology, chemistry and clinical development to identify targets and disease hypotheses and design novel drug candidates.

Insilico's pipeline consists of 31 programs for 29 drug targets in cancer, fibrosis, immunity, central nervous system and aging-related diseases. Five programs have reached clinical stage, including a lead fibrosis drug in Phase II trials. The Company has raised more than USD400m, filed over 300 patents and published more than 200 papers in peer-reviewed journals.

 <https://insilico.com>

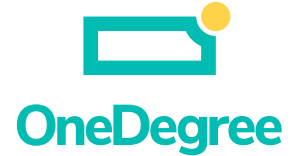
# Technology Fast Winners

2023 Deloitte Hong Kong Technology Fast Awards



**#05** Fintech

Growth rate  
**1149%**



## AI Financial Technology Company (OneDegree Hong Kong)

OneDegree was established in August 2016, with a mission to make insurance simpler, faster and better. The company received a virtual insurer licence from the Hong Kong Insurance Authority in April 2020. It is now a multi-line digital insurance business, offering protection for pets, personal medical, e-commerce and home insurance to individuals; and professional indemnity, D&O insurance, cyber security and digital asset coverage to businesses. OneDegree Group announced the completion of its Series B funding of USD55 million in June 2023.

<https://www.onedegree.hk>



**#06** Hardware

Growth rate  
**762%**



## Hestia Technology Limited

Hestia was founded in 2018 in Hong Kong, known as the "Gourmet's Paradise". Focusing on the field of cooking robots, with Chinese cuisine as the entry point, it is committed to developing revolutionary cooking technology products.

"We envision a world where cooking becomes an experience that not only enhances taste, speed and safety, but also ease and health for everyone, all while we consciously prioritise our planet's wellbeing. Hestia's mission is to create the most innovative hardware, software and service solution to empower our users to serve consistently high-quality products and services each day around the world."

<https://www.hestia.kitchen>



**#07** Software & Big Data

Growth rate  
**723%**



### Varadise Limited

Varadise Limited is a pioneering force in the realm of digital engineering, spearheading the path to excellence in the built world. Providing one-stop solutions for construction, facility and city data management, it harnesses the power of digital twin technology to revolutionise how humans interact with and manage our physical environments.

"Our cutting-edge platform seamlessly integrates real-time data and advanced analytics, enabling unparalleled insights into the entire lifecycle of assets and infrastructure. With Varadise Limited, clients gain an unrivalled advantage in decision-making, planning and optimisation, empowering them to create sustainable, efficient, and resilient built environments for the future."

<https://varadise.ai>



**#08** Software

Growth rate  
**633%**



### Clare.ai Limited (Wati)

Wati is a growing CPaaS platform that revolutionises business communication through its comprehensive WhatsApp API solutions, catering to every size of business. Its mission to "make business messaging simple" is at the core of everything the company does. Wati's key features include a shared Inbox for collaborative team communication, integration with popular CRMs to enhance efficiency, bulk WhatsApp messaging to attract customer engagement, and no-code chatbots for hassle-free customer support.

<https://www.wati.io>



**#09** Software & AI

Growth rate  
**361%**



### Customindz Limited (viAct)

viAct is Asia's top sustainability-focused AI company that provides "Scenario-based Vision Intelligence" solutions for risk prone workplaces including construction, oil & gas, manufacturing, facility management and mining industry settings to build smart cities and nations.

"Since its inception in 2016, viAct has developed 60+ pre-built AI modules, processing billions of images every day. Our AI solution covers over 10 different geographic locations, more than 200 large job sites are using viAct to prevent safety and environmental non-compliance and optimise productivity by transforming vision into practical actions. viAct is trusted and recognised by Forbes Asia, the World Economic Forum and Google for its one-of-a-kind surveillance approach that manages high risk environments in a far smarter way than humans can do manually."

<https://www.viact.ai>



**#10** Internet & Platform Services

Growth rate  
**311%**



### Return Helper Limited

Return Helper is a data driven solution for cross border ecommerce returns. In 2023 return helper processed more than 750,000 ecommerce returns in the US and Europe for over 700 Asia based merchants.

<https://www.returnhelper.com>



**#11** Life Sciences & Medical Treatment

Growth rate  
**227%**



### BioMed Technology Holdings Limited

BioMed Technology Holdings (BioMed) was established in September 2018 as a partner company of Hong Kong Science and Technology Parks Corporation (HKSTP). BioMed is committed to the research and development of precision medicine-based microbiome testing service and probiotic products, providing precise, proven and personalised microbiome management solutions to the physical and mental health problems arising from microbiome dysbiosis.

<https://biomed.hk>



**#12** *Internet & Platform Services*

Growth rate  
**176%**



**10Life**

### 10Life Group Limited

10Life is an innovative digital insurance ecosystem with a mission to bring fair insurance to life. Founded by seasoned insurance professionals, 10Life combines technology with compassion to ensure fair products, fair sales and fair claims.

"We have pioneered the insurance product ratings system concept to distinguish good products from bad. Our team of professional advisors provides unbiased advice, and we have independent claims ambassadors to provide comprehensive end-to-end claims support. Our goal is to help customers get the right insurance coverage and fair pay-outs."

<https://www.10life.com>



**#13** *Life Sciences, Medical Facility & Service*

Growth rate  
**115%**



**CELLOMICS**

### CELLOMICS Co., Ltd

Cellomics is an oncology diagnostic technology company. The company is a leader in liquid biopsy and precision medicine products and solutions. Its full suite of technologies including cancer tumour cell (CTC), Digital PCR and NGS Platforms provides end-to-end solutions to support for the treatment needs of all cancer patients.

<https://www.cellomicsbio.com>



**#14** *Internet & Platform Services*

Growth rate  
**108%**



**GETLINKS**

### GetLinks HK Limited

GetLinks is Asia's fastest growing talent platform, advancing humanity with new-tech, extending from the GBA (HK/GZ) to Southeast Asia (SEA) markets. With millions of young digital and white collar professionals, GetLinks helps governments and companies build their local to remote distributed teams. As companies target booming SEA markets, GetLinks helps them inbound into those markets quickly and efficiently, tapping into local partnerships, resources, customers and workforces.

GetLinks is invested and supported by Asia's largest traditional jobs board player SEEK (JobsDB and Jobstreet), Alibaba Entrepreneurs Fund, Cyberport, HKSTP and leading family offices and corporate venture capital. Its success thus far is driven by all stakeholders committed to powering the future of work and education; and committing to the ESG objectives of financial and education inclusion for humanity.

<https://getlinks.com>



**#15** Internet &  
E-commerce

Growth rate  
**102%**



**Buyandship**

### **E-BUY GLOBAL LIMITED (Buyandship)**

Established in 2014, Buyandship is dedicated to helping people buy products from around the world using the power of big data, AI-based global price comparisons, social commerce and logistics technologies. Buyandship's goal is to provide customers with a wide range of products at the lowest prices possible, while making shopping easy and convenient. With a presence in 11 countries and regions, operating 12 warehouses and serving 1.72 million registered users, Buyandship aims to become the default shopping platform for consumers.

 <https://www.buyandship.today>

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# Rising Star Leadership Winners

2023 Deloitte Hong Kong Technology Rising Star Leader (in alphabetical order)



**#01** *Finance*



## Micro Connect (H.K.) Investments Limited

Micro Connect is an exchange group that leverages financial technology to connect global capital with micro and small businesses. Through its innovative revenue sharing investment and financing model, stores in the food & beverage, retail, services, and culture & sports sectors can access affordable long-term capital on the Micro Connect (Macao) Financial Assets Exchange (MCEX), the world's first licensed exchange for daily revenue shares.

Micro Connect's proprietary revenue sharing asset class, Daily Revenue Obligations (DROs), gives investors direct and diversified exposure to the daily transparent cash flows of millions of stores in vibrant consumer economies, while making capital more accessible and affordable for business owners. With a licensed exchange, a regulated fund and structured product solutions, Micro Connect offers efficiency and liquidity in small business investing for global professional investors and a new alternative to impact investing.

 <https://microconnect.com>



**#02** *Hardware*



## Shenzhen Jaguar Microsystems Co., Ltd.

Jaguar Microsystems is the leading vendor in delivering a programmable data processing unit (DPU) system-on-chip solution with 400Gbps throughput, which is critical technology in the new era of cloud computing.

Founded by Dr. Sunny Siu and a core team, each with over 20 years of experience in the semiconductor industry, the company has gathered a world-class silicon and software team formerly from Broadcom, Intel, Arm, HiSilicon (Huawei) and Alibaba.

Since its establishment in 2020, the company has received strategic investments from top institutions including Tencent, HONGSHAN, SMIC, Temasek and Shenzhen Capital Group.

 <https://www.jaguarmicro.com>

# Rising Star Winners

2023 Deloitte Hong Kong Technology Rising Star Awards (in alphabetical order)



**#03** Consumer Products &  
Retail, Food & Beverage

avant

## Avant Meats Company Limited

Founded in Hong Kong in 2018, Avant is Asia's first cultivated fish company and the first cultivated meat company in China. Avant's end-to-end proprietary technology platform offers a sustainable, pollutant-free and climate-friendly solution to produce nutritious, tasty fish and functional marine proteins directly from fish cells.

Avant aims to be a global leader in developing cultivated proteins for food, skincare and functional applications. Avant has been named a Technology Pioneer by the World Economic Forum, a Bloomberg New Economy Catalyst by Bloomberg QuickTake, and one of Forbes Asia's 100 to Watch. It has featured in Reuters, TIME Magazine, The Financial Times, the South China Morning Post and CCTV.

<https://www.avantmeats.com>



**#04** Life Sciences, Medical  
Facility & Service

Cornerstone  
Robotics  
康诺思腾

## Cornerstone Robotics Limited

Cornerstone Robotics is dedicated to delivering accessible surgical systems that allow patients around the world to benefit from the highest standards of care. Founded in 2019, it has assembled an international team of surgical robotics experts, clinical professionals, and expertise from a diverse range of disciplines. To accelerate growth, it has established key innovation hubs in Beijing, Shanghai, Shenzhen, Hong Kong and Boston.

Cornerstone Robotics aspires to create safe, efficient and precise surgical robots that enhance and extend surgical capabilities. This is the foundation upon which it will develop next-generation technologies and penetrate the surgical specialties of the future.

<https://www.csrbtn.com>



### **Elitestek Limited**

Elitestek was established in 2020 and has headquarters in Shenzhen and Hong Kong, with R&D and local offices in Hangzhou and Chengdu. The company's products include the Trion series and Titanium series field-programmable gate arrays (FPGAs). Elitestek's quantum architecture makes the performance, power and area advantage of its products four times that of traditional FPGAs.

Elitestek's core team has rich technology, practical experience and deep professional knowledge, focusing on providing customers with high-performance, low-power solutions to meet the unique needs of different industries and application fields, helping them achieve success in competitive markets. Elitestek's products are widely used in communications, medical, industrial control, machine vision, automotive electronics, AI applications and other fields.

 <https://www.elitestek.com>

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### **Floship Limited**

Floship's smart logistics solutions cover all aspects of the global supply chain, ensuring minimal operation effort for e-commerce businesses while exceeding their expectations, allowing business owners to concentrate on driving growth and investment flexibility while gaining peace of mind.

A key component of Floship's global logistics solutions is advanced logistics technology that streamlines and automates e-commerce brands' supply chains to expedite growth and expansion. Floship's plug-and-play integrations, intelligent automation rules and comprehensive operational and management tool suite act as the building blocks of supply chain optimisation, tailored to address growth factors such as cost, efficiency, complexity, visibility and accuracy.

 <https://www.floship.com>

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**#07** *Life Sciences, Medical  
Facility & Service*



### **Great Bay Bio Limited**

Great Bay Bio (GBB) is an innovative biotech tool company, committed to the application of AI and other leading-edge technologies to bioprocessing. GBB is driving technological innovation in global life sciences, aiming to address the challenges of long timelines, high costs and low success rates in drug development and other industries involving bioprocessing. Since its establishment, GBB has commercialised multiple AI-enabled biotechnology platforms in fields such as cell engineering and molecular design, and has established strategic partnerships with multiple multinational enterprises, providing services and innovative tools covering antibody drugs, vaccines, in vitro diagnostics, synthetic biology and other fields.

 <https://www.greatbay-bio.com>

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**#08** *Consumer Products &  
Retail, Food & Beverage*



### **Green Monday Holdings Limited**

Green Monday Holdings (GMH) produces and distributes plant-based food products globally, with the vision to “Make Change Happen, Make Green Common”. It is the pioneer in Asia in the launch of a large-scale plant-based movement by advocating a flexitarian lifestyle. OmniFoods, under GMH, is a globally leading plant-based brand that includes OMNI Pork, Beef, Seafood and Ready-to-Eat product series. Over the past few years, OmniFoods has received various international awards and accolades. OmniFoods owns the patented OmniNano technology and will continue to develop sustainable, innovative and wholesome food products through its cutting-edge technologies.

 <https://greenmonday.org>

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## I2COOL LIMITED

i2Cool is a technology start-up incubated by the HK Tech 300 Program at City University of Hong Kong and Incubation Program of Hong Kong Science and Technology Parks. The team developed the world's leading passive radiative cooling paint with zero energy consumption. Its Electricity-free Cooling Paint is the first commercial product of i2Cool, officially launched to the market in November 2021. The paint is used as a cooling source from the environment and achieves cooling effects below ambient temperature through efficient solar reflection and mid-infrared emission.

This patented cooling technology is born for building and construction, outdoor facilities and outdoor storage systems, and the company's market has expanded to Southeast Asia, the Middle East, Europe and the United States, accelerating the global pace of energy-saving technology. i2Cool is committed to integrating innovative, energy-saving technologies into people's daily lives, alleviating energy shortages, promoting sustainable development and economic growth, and moving towards carbon neutrality.

<https://www.i2cool.com>



## imBee Limited

imBee, a fast-growing AI SaaS company based in Hong Kong and backed by global investors, is strategically positioned to establish a new standard for superior customer experience and business transformation in enterprises. Leveraging the global adoption of instant messaging, imBee unveiled AiskBee in 2023, marking Hong Kong's first GenAI-Powered Enterprise Knowledge Base Assistant. AiskBee is a revolutionary benchmark in customer engagement and service, surpassing conventional products by offering diverse avenues to enhance customer interactions across different industries.

<https://www.imbee.io>



## Immuno Cure Holding (HK) Limited

Immuno Cure is a clinical stage biotechnology group based at Hong Kong Science Park, focusing on research and development of immunotherapies for cancers, inflammatory and infectious diseases based on its patented PD-1-enhanced DNA vaccine, anti-Δ42PD1 antibody and vaccine delivery platforms; with two DNA vaccine candidates currently in clinical trials.

<http://www.immunocure.hk>



**#12** *Fintech*

**Ksher**

### **Ksher (Hong Kong) Co., Limited**

Ksher, founded in Thailand, which initially helped merchants accept mobile payments from Chinese tourists, has grown into a leading technology platform in Asia that provides one-stop services to help merchants start, run and grow their businesses more easily. It operates from offices in China, Thailand, Malaysia, Singapore, Japan and the UAE and expands through local partners in other locations across Asia and Europe.

"During the past few years, we have served merchants of all sizes, accumulated deep local insights and expanded our footprint into various geographic locations. Ksher also simplifies cross border e-commerce for international merchants with ubiquitous access to Southeast Asia markets through innovative plug and play solutions."

 <https://www.ksher.com>

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**#13** *Hardware*

**LaSense**

### **LaSense Technology Limited**

LaSense Technology is a world-leading high-tech startup focusing on laser gas sensing technology. Based on original technology from the Chinese University of Hong Kong, LaSense has independently developed laser sensing instruments applied in the carbon neutrality and medical fields. LaSense has expanded from Hong Kong into the Greater Bay Area and has become a representative laser instrument supplier in China.

 <http://www.lasensetech.com>

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**#14** *Internet*



### **On-us Company Limited**

Introducing On-us—Empowering Business Success with AI-driven Solutions. As a prominent PaaS provider, On-us harnesses the power of AI to drive informed business decision-making. Its comprehensive solutions include incentive-driven digital vouchers, advanced data analytics, and integrated adtech, martech and membership tech solutions.

"By leveraging our solutions, businesses can deliver precise offerings, enhance customer loyalty and fuel business growth. Join our esteemed clientele, which includes global financial services marketers, people management teams, blue chip property developers, non-profit organisations, event planners and SMEs. Unlock the potential of intelligent solutions for your success today."

 <https://www.on-us.com>

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PRESSLOGIC

### PressLogic Limited

PressLogic is an AI technology and digital media company driving innovation in the adtech ecosystem and providing industry-leading SaaS solution MediaLens, which optimises digital advertising to empower brands and merchants. MediaLens harnesses big data and machine learning to solve challenges around the digital marketing landscape, campaign optimisation, and monetisation for brands and merchants. Through leveraging emerging technologies like blockchain, AI and conversational interfaces, PressLogic continues to develop next-gen solutions that strengthen transparency, efficiency and value exchange across the digital advertising industry. PressLogic is honoured to be recognised for its pioneering work advancing the entire adtech value chain and shaping the future of marketing technology.

 <https://presslogic.com>



### Quantifeed HK Limited

Headquartered in Hong Kong with global offices in Singapore, Tokyo, London, Sydney and Hyderabad, Quantifeed is the leading digital wealth management solutions provider for financial institutions. Developed by a team of financial engineers, QEngine is an award-winning technology platform recognised for its innovation. The platform powers personalised and engaging wealth management journeys for banks, insurers, brokers and wealth planners.

Quantifeed has deployed QEngine to some of the largest financial institutions, including China CITIC Bank International in Hong Kong, DBS Bank in Singapore, MUFG Bank in Japan, and Julius Bär and BBVA in Europe.

 <https://www.quantifeed.com>



#17 *Hardware*

**Raysolve** 镭昱

### **Raysolve Technology Company Limited**

Raysolve is dedicated to R&D on micro-LED micro-display technology, focusing on chip architecture, fabrication processes and the development of quantum dot based full-colour technology. Originating from Hong Kong University of Science and Technology (HKUST) with decades of experience in leading-edge micro-LED micro-displays, Raysolve recently unveiled its 0.11-inch and 0.22-inch single-chip full-colour Micro-LED micro-displays, which are the smallest sizes in their field. Both chips have an ultra-small pixel pitch of 3.5µm, ultra-high micro-LED pixel density of 7200 PPI, and full-colour brightness of more than 100,000 nits. This breakthrough allows for extremely lightweight design display modules that are ideal for consumer-level AR glasses.

 <https://www.raysolve.com>

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#18 *Software*

**sleekflow**

### **Sleekflow Technologies Limited**

SleekFlow is an AI-powered Omnichannel Conversation Suite that enables a comprehensive 1:1 customer journey across major social and messaging services like WhatsApp, Facebook, Instagram, SMS, live chat, or whatever clients' customers prefer. SleekFlow is headquartered in Hong Kong, with offices in Singapore, Malaysia, Indonesia, Brazil and the UAE. In 2022, the startup secured an USD8 million Series A funding round, led by Tiger Global, with participation from AEF Greater Bay Area Fund and Transcend Capital Partners.

"Our customer engagement platform streamlines the entire commerce process, from sales to support, providing businesses with a centralised location to manage all their customer conversations and automate business growth. Trusted by businesses worldwide, from start-ups to enterprises across various industries, SleekFlow accelerates social commerce, supercharges productivity and personalises customer experiences that drive conversions through conversations."

 <https://sleekflow.io>

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### **Telefield Medical Imaging Limited (Scolioscan)**

Founded in 2012, Telefield Medical Imaging (TMI) is a leading provider of 3D ultrasound imaging technology, equipment and solutions. Its product Scolioscan is the world's first and only 3D ultrasonic scoliosis assessment system, which offers radiation-free and efficient imaging of the spine.

The Company's R&D team is led by Professor Zheng Yongping from The Hong Kong Polytechnic University. Prof. Zheng served as the Founding Head of Biomedical Engineering in PolyU. He was ranked among the world's top 2% most-cited scientists in rankings compiled by Stanford University in 2021, 2022 and 2023.

After 20 years of technical research and 10 years of clinical exploration, Telefield Medical Imaging owns 19 pioneering and leading technologies with nearly 100 patents. It provides early diagnosis of chronic diseases and monitoring of other bone deformations including spinal deformity, making diagnosis and treatment more accurate, visualised and standardised.

 <https://www.scolioscan.com>

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### **Valuable Capital Limited**

Valuable Capital is a leading online broker leveraging the power of technology and social media. Its mission is to make global investing clear, simple and engaging for everyone. Built upon well-architected technology infrastructure, Valuable Capital enables clients with an interactive and superior investment experience achieving a balance of functionality and simplicity.

"We offer a wide range of services through our platforms, including stock trading, bond trading and margin financing. Our vibrant and diverse online community can provide real-time market information and connectivity to our users, companies and media. On the enterprise solutions side, the services we provide include equity capital market, fixed income, currency and commodities (FICC), wealth management, asset management and employee stock ownership plan (ESOP) solutions."

 <https://www.vcglg.com>

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# Tech Fast Female Winners

2023 Deloitte Hong Kong Technology Fast Outstanding Female Entrepreneur Awards



Software



## Clare.ai Limited (Wati) | **Bianca Ho**, Co-founder & COO

Wati is a growing CPaaS platform that revolutionises business communication through its comprehensive WhatsApp API solutions, catering to every size of business. Its mission to "make business messaging simple" is at the core of everything the company does. Wati's key features include a shared Inbox for collaborative team communication, integration with popular CRMs to enhance efficiency, bulk WhatsApp messaging to attract customer engagement, and no-code chatbots for hassle-free customer support.

<https://www.wati.io>



Consumer Products &  
Retail, Food & Beverage



## Avant Meats Company Limited | **Carrie Chan**, Co-founder & CEO

Founded in Hong Kong in 2018, Avant is Asia's first cultivated fish company and the first cultivated meat company in China. Avant's end-to-end proprietary technology platform offers a sustainable, pollutant-free and climate-friendly solution to produce nutritious, tasty fish and functional marine proteins directly from fish cells.

Avant aims to be a global leader in developing cultivated proteins for food, skincare and functional applications. Avant has been named a Technology Pioneer by the World Economic Forum, a Bloomberg New Economy Catalyst by Bloomberg QuickTake, and one of Forbes Asia's 100 to Watch. It has featured in Reuters, TIME Magazine, The Financial Times, the South China Morning Post and CCTV.

<https://www.avantmeats.com>



Internet



**On-us Company Limited | Honnus Cheung, Co-founder & CSO**

Introducing On-us—Empowering Business Success with AI-driven Solutions. As a prominent PaaS provider, On-us harnesses the power of AI to drive informed business decision-making. Its comprehensive solutions include incentive-driven digital vouchers, advanced data analytics, and integrated adtech, martech and membership tech solutions.

"By leveraging our solutions, businesses can deliver precise offerings, enhance customer loyalty and fuel business growth. Join our esteemed clientele, which includes global financial services marketers, people management teams, blue chip property developers, non-profit organisations, event planners and SMEs. Unlock the potential of intelligent solutions for your success today."

 <https://www.on-us.com>



Pharmaceuticals



**GenieBiome Limited | Prof. Siew Ng, Co-founder**

G-NiiB GenieBiome is a biotechnology company founded by world-renowned clinician-scientists and supported by a multidisciplinary team of specialists in microbiology, metagenomics, bioinformatics, disease biomarkers, food technology, clinical trials, IP development and commercialisation.

"For over a decade, our team has pioneered the use of microbiome with evidence-based science to tackle a myriad of diseases, including colorectal cancer, obesity, atopic eczema, autism and mood disorders, revolutionising the prevention, diagnosis and treatment of disease. Our precision portfolio of G-NiiB includes diagnostic and risk prediction tests, next-generation microbiome precision formula, and precision medicine tailored for the Asian population. Our vision is to be a game changer in human health with microbiome solutions."

 <https://www.geniebiome.com>

# Turning innovations into wealth: How to fill the commercialisation gap in Hong Kong

# About the study

This report is part of a series of studies conducted by Deloitte that evaluate and trace the status and development of Hong Kong's I&T ecosystem. The principal objective of this year's study is to assess how Hong Kong's I&T ecosystem has evolved over the past two years in terms of the strengths and challenges it faces, whether I&T policies are developing in the right course to achieve its expected outcomes, and what tailored action plans need to be put into place towards enhancing Hong Kong's overall I&T competitiveness.

We are honoured to have Hong Kong University of Science and Technology (HKUST) Business School as our official knowledge partner and are particularly thankful for their input in designing the survey, carrying out part of the survey and providing valuable insights during the writing of this report.

## Research methodology

The study gathers, analyses and synthesises information drawn from both primary and secondary sources. Primary information is gathered through:

- Surveys that target experienced entrepreneurs and university students who have entrepreneurial intentions, and
- Extensive interviews with various stakeholders in the innovation ecosystem, including government officials, serial entrepreneurs, venture capitalists, managers of incubators and accelerators, and others.

The survey continues to adopt half the questions that appeared in the 2021 HKTF report for the sake of consistency and continuousness, and the other questions are newly designed to address key issues mentioned in the I&T strategy, such as challenges university students/research faculties are facing when converting their R&D outcomes and collaborating with the industry, and specific policies and support that is anticipated among relevant parties.

**The entrepreneur survey:** 38 Hong Kong-based entrepreneurs of startups representing 12 industries participated in the survey. The top three sectors are Artificial Intelligence (24%), Biotechnology, medical and healthcare (24%) and Financial technology (13%). The survey also captured a diverse representation of participants, with companies from seed stage, early stage, roll-out and growth stage accounting for 11%, 13%, 37% and 39%, respectively.

**The student survey:** A total of 171 Hong Kong-based university students participated in the survey with a significant majority (73%) are pursuing STEM majors. About 24% of the respondents are engaged in academia, holding roles such as researchers or research assistants.

The surveys were carried out in October 2023 in Hong Kong. A series of individual interviews with key stakeholders across Hong Kong's innovation ecosystem were conducted simultaneously. Their viewpoints are presented throughout the report.

# Executive summary

This study explores Hong Kong's latest progress in establishing itself as a world-class I&T hub, covering contributions factors of government and policy, R&D forces, talent and education, funding environment, business support, and culture and norms. It also assesses the challenges Hong Kong faces when converting its innovation results into commercial and industrial achievements and provides recommendations on how to bridge this commercialisation gap.



**The momentum of Hong Kong' burgeoning startup ecosystem remains intact against a challenging external environment and interest rate hikes that put downward pressure on market valuations. However, there has been a noticeable change in how its strengths are perceived as challenges and competition continue to arise**

- Hong Kong's vibrant startup ecosystem continues to thrive with both the number of startups and employment in the I&T industry reaching new heights.
- However, the overall recognition among entrepreneurs of Hong Kong's strength as a destination to start a business have taken a downturn, with over 50% of entrepreneurs voicing their concerns over access to talent and securing funding in Hong Kong.
- The recent economic uncertainties have further dampened entrepreneurs' confidence with about 53% entrepreneurs believing that the current economic climate poses great challenges for startups as they have to navigate through difficult economic conditions.



**The Hong Kong Government's unveiling of its first-ever blueprint for the development of the I&T sector is a significant milestone with a clear roadmap and strategic direction, enhanced collaboration, and targeted measures. It will serve as a catalyst to propel the high growth of the I&T sector in Hong Kong**

- The Blueprint unprecedentedly sets forth a systematic plan and clear roadmap for Hong Kong's I&T development in the next 5-10 years by laying out four development directions and corresponding supporting measures.
- The unwavering support policy for startups has yielded positive results, with 50% of surveyed entrepreneurs identifying government incentives and polices as the top advantage of starting a business in Hong Kong, compared with 41% in 2021.



**Hong Kong has not been able to reap substantial I&T output. It also suffers from the relatively lower R&D investment of local businesses, further reducing demand for academia-industry cooperation. A coordinated strategy is needed to close the commercialisation gap and enhance the economic value and social impact of I&T**

- Hong Kong's gross expenses on R&D (GERD) has achieved incremental growth in the past five years, but its absolute amount and intensity are still lower than those of OCED countries. Despite extensive investment, the innovation output in Hong Kong has not been rewarding in term of the economic value generated by the I&T sector.
- The potential of innovation capabilities of local business remains largely undervalued. R&D activities are mainly led by tertiary institutions and research centres in Hong Kong, with the local industry having limited incentive to conduct R&D, whereas in Singapore and Israel, the business sector plays a more dominant role in overall R&D activities by contributing 63% and 91% to the GERD, respectively, while it is only 42% in Hong Kong.
- The Hong Kong Government has taken a multi-pronged approach to enhance technology commercialisation, including increasing the land and infrastructure available for translating scientific research, establishing the Office for Attracting Strategic Enterprises that is responsible for attracting leading overseas enterprises to set up R&D centres in Hong Kong, and funding university professors/fellow researchers to commercialise their research outcomes with the implementation of the HKD10 billion Industry-Academic-Research 1+ Plan (RAISe+).



**While the latest "talent trawling" campaign has achieved visible progress with the influx of talent reaching a record high, the persistent talent shortage in the I&T sector highlights the needs for a more industry-specific approach and the impetus to build local I&T talent pipelines**

- The scarcity of talent proves to be the top challenge facing Hong Kong's startup companies and the high cost of living only exacerbates the problem. About 58% of surveyed entrepreneurs cited costly living as the biggest obstacle for them to attract talent.
- The recent talent attraction efforts launched by the Government have achieved significant results with over 127,000 applications<sup>1</sup> approved under various talent admission schemes in the first 11 months of 2023 and about 81,000<sup>2</sup> of them having arrived in Hong Kong, surpassing its annual target of admitting at least 35,000 professionals.
- However, the existing talent schemes are not industry focused, which might not necessarily translate into local I&T labour force. For instance, less than a quarter (23%) of the talent applying for the Quality Migrant Admission Scheme (QMAS) are from an Information Technology background. That is reflected in our survey as well, with less than 10% of surveyed entrepreneurs finding either the Quality Migrant Admission Scheme or Top Talent Pass Scheme attractive in addressing their talent shortage.



**The VC funding winter has hemmed in the city's thriving I&T ecosystem. The Hong Kong Government has adopted a more proactive approach to stimulate venture investment and also provides long-term capital necessary for R&D intensive startups to scale up**

- VC-backed funding activity dropped to its lowest level in six years with an aggregated deal value of USD1.3 billion across 50 deals in 2022. This downtrend continued in 2023, with just USD691 million of funding as of October 2023.
- VC investment fell across all stages, with early-stage funding reported biggest decline in both deal volume and value. The plummeting valuations of tech companies has led to a drop in the number of mega-deals with just one single VC-backed company managing to secure over USD100 million in financing compared with four in 2022.
- The establishment of the Hong Kong Investment Corporation (HKIC) and combination of four funds signifies a more proactive approach taken by the Government in guiding investment in the I&T sector and stimulating private investment with government-led fund helping de-risk the proposition for institutional investors against the backdrop of a challenging financial market.



**Entrepreneurial intention has been on the rise among Hong Kong youth because of an increasingly conducive startup ecosystem. However, to break the stereotypical perception of entrepreneurship and shift from a risk-averse culture to one that embraces experimentation and innovation, systematic changes are still required**

- Entrepreneurial intention has been on the rise among Hong Kong youth with an astounding of 42% actively considering starting their own or working for a startup company.
- Perceptions about Hong Kong's entrepreneurial culture and atmosphere have slightly deteriorated with more students rated Hong Kong's entrepreneurial spirit below 3.
- The Government needs to break the stereotypical perception of entrepreneurship and shift from a risk-averse culture to one that embraces experimentation and innovation. It also needs to take the lead in enhancing the community's trust in the I&T sector.



## Call to action

Although Hong Kong has undeniably established itself as a prominent innovation hub, it is vital to recognise that there is still work to be done. Stakeholders in our interviews have provided valuable recommendations on how to solidify Hong Kong's position as a leading global centre for technology and innovation.



**The Hong Kong Government should embrace an “output-thinking” mindset when crafting and executing its I&T policies. By focusing on the effectiveness of resource utilisation and the quality of processes involved, the government can drive meaningful outcomes and maximise the impact of its initiatives.**

- The Hong Kong Government can consider introducing a more precise and comprehensive set of performance indicators to understand how these I&T programs function in terms of their effectiveness in delivering outputs, the eventual impacts of those outputs, and how to inform strategic decision-making and better allocate resources to adapt to changing the I&T landscape in Hong Kong
- Measuring innovation performance has now become a global priority. Internationally agreed indicators cover the following aspects<sup>3</sup>:
  - R&D investment, e.g., R&D expenditure in the public sector, in the business sector, direct government funding and government tax support for business R&D
  - R&D personnel, e.g., new doctorate graduates in STEM and international scientific co-publications
  - Innovation activities, e.g., SMEs with product innovations, innovative SMEs collaborating with others, PCT/trademark/design patent applications
  - Innovation impact, e.g., employment in innovative enterprises, sales of product innovations, and exports of medium-to-high tech products



**The commercialisation of R&D is a collective endeavour, requiring the combined efforts of all parties involved. Universities need to enhance their roles in incentivising technology transfer efforts within the research community. Local businesses are also encouraged to step up their investment in R&D and actively apply local R&D outcomes.**

- **Supply-side changes:** RAISE+ is a great starting point, yet in the long run, Hong Kong universities need to further loosen policies and promote a culture that values technology transfer.
  - For instance, universities can consider increasing the significance of “technology transfer” in the tenure promotion evaluation as the existing one heavily emphasises research publication and funding acquisition. Meanwhile, improving the flexibility of “outside practice” would allow professors to devote more time to engage with spinout businesses and investors.
  - Review existing policies and terms, for instance the equity shares universities take in spinouts, ownership of IP, and distribution of income generated from IP licensing, to make them more attractive for scientists and researchers. For instance, The University of Hong Kong recently announced it would increase the share of income generated by licensing IPs for inventors from 33.3% to 70%.

- Incentivise scientists/researchers to engage with the industry through various commercialisation channels, such as technology licensing, collaborative research, contract research and paid consultancy. One of the viable solutions is to revise the eligibility criteria for the R&D funding to include the need to focus on technology transfer, or to reorient R&D funding towards projects that are more outcome-driven, and emphasizing collaboration with the industry.
- **Demand-side changes:** The Hong Kong Government's current focus is on attracting leading overseas firms to set up R&D branches. This report argues that additional work is needed in stimulating innovation demand among local SMEs. This can be achieved through the following actions:
  - Reviewing government procurement to make it more accessible for SMEs to bid for public contracts. For instance, the UK government has actively facilitated SMEs to benefit from government contracts by requiring all public departments and bodies to consider SMEs when designing their procurements, creating a central platform showing upcoming procurement opportunities and lowering barriers for entry through the removal of unnecessary insurance costs<sup>4</sup>.
  - Increasing SMEs' innovation absorption capacities by offering them funding and necessary tools and knowledge. For instance, the Agency for Science, Technology and Research of Singapore helps connect SMEs with a pool of scientists for the development of technological capabilities. Hong Kong could consider launching such grants as an AI-adoption scheme that incentivises local business to utilise AI technologies and provides support for talent recruitment/reskilling.



**Hong Kong needs to further diversify its sources of capital for startups by stimulating the risk appetite of Hong Kong-based venture capital and encouraging them to capitalise on the growing opportunities arising from the local I&T ecosystem.**

- There are still funding gaps unfilled for tech companies at early to growth stages. A viable solution is for the Government to establish a fund of funds (FoF) that acts as a limited partner and invests in other matching funds focused on tech-related early-stage investment. The FoF can play a positive role in channelling private capital into the local I&T ecosystem.
- Hong Kong can also stimulate more capital from family offices, hedge funds and private equity firms by encouraging them to either invest directly in local tech enterprises or to inject money into VC funds as limited partners to sow the seeds of future innovations.
- To better act as the strategic investor, the HKIC can consider i) continuously refining its investment goal and strategy so that its investment portfolio can align with changing market and emerging opportunities, ii) expanding its investment portfolio to include investment in early-stage companies that are forward-looking and strategically important for Hong Kong's I&T industry iii) closely monitoring the financial performance of General Partners selected to make strategic investments for the corporation and actively seeking experience and industry insights from their choices, which allows the corporation to stay ahead of market trends and effectively manage risks.



**Hong Kong's talent policy should be enhanced to ensure greater precision and industry relevance. Meanwhile, Hong Kong needs to tap into the potential of the local labour force to build a sustainable, future-proof talent pipeline.**

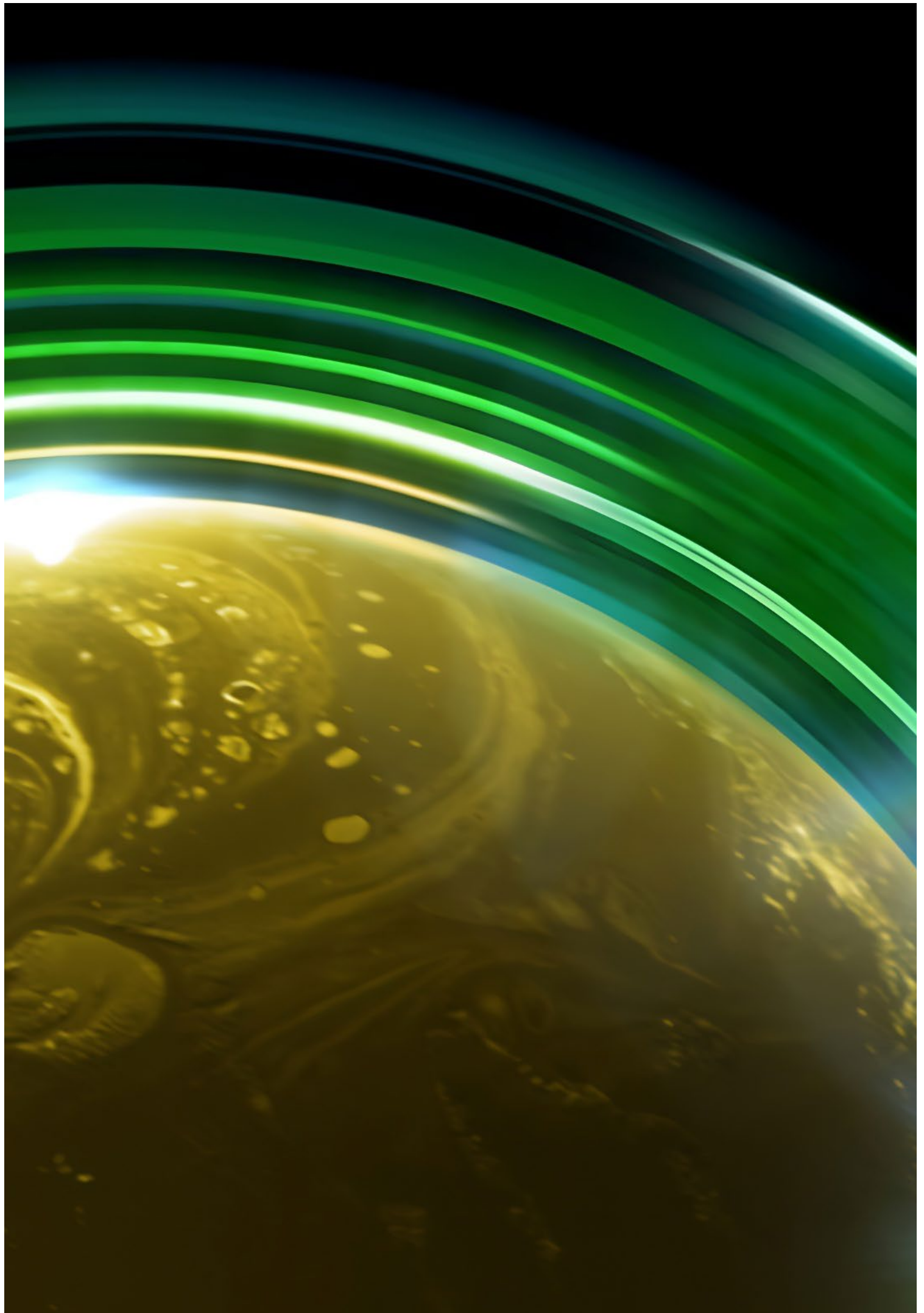
- Tailor talent attraction policies to be industry-specific by identifying areas facing the greatest shortage within the I&T sector. This can be achieved by establishing a centralised platform that serves as a repository of talent needs for local I&T companies. This platform would enable I&T startups to list their specific talent requirements. It would be easier for overseas candidates to navigate and identify the areas where there is a demand for talent.

- Strengthen resources to retain overseas top talent. This includes allocating land in the Northern Metropolis for additional talent apartments and providing housing subsidy, education and medical allowances for overseas talents. For instance, to attract and retain top-notch talent worldwide, Shenzhen launched initiatives like the "Peacock Plan", offering talents with housing subsidies, children's education, employment opportunities for spouses, and medical insurance, making talented individuals feel more secure in developing their careers in Shenzhen.
- Establish long-term talent exchange programs between academia industry by offering more government-sponsored internship and placement programs that help local students develop skills that are relevant to industry and allow companies to nurture and lock in future talent.
- However, talent attraction can only serve as a temporary fix. In the long run, Hong Kong needs to tap into local sources of talent. This can include increasing career prospects in the I&T sector and providing STEM students or early career researchers with more job opportunities and work placements in the local and overseas I&T industries.



**The Government can consider reducing the complexity surrounding the various I&T support programs and extend business support services to cover startups' needs throughout their business lifecycle.**

- Enhance the transparency and attractiveness of government funding programs by streamlining the process of vetting and approval of investment proposals to ensure that allocated funds can support the funding needs of startups efficiently. Certain entrepreneurs wish that the application process for government funding could be shorter and the requirements less stringent. As a result, some companies find it easier to secure funding from alternative sources in other locations like the Chinese mainland or Singapore.
- Coordinate I&T support programs across different government departments. There is consensus among stakeholders that the Government and its support agencies need to reduce complexity by consolidating funding schemes with similar purposes.
- Incubators need to tailor their support and resources to meet ever-changing requirements of startups at different stages throughout their operation lifecycle. For instance, with startups scaling up, their needs and priorities have shifted correspondingly, requiring more support for market expansion (e.g., how to navigate the regulatory terrain when entering the GBA or Chinese mainland market) and network extension.



# Hong Kong's startup landscape at a glance

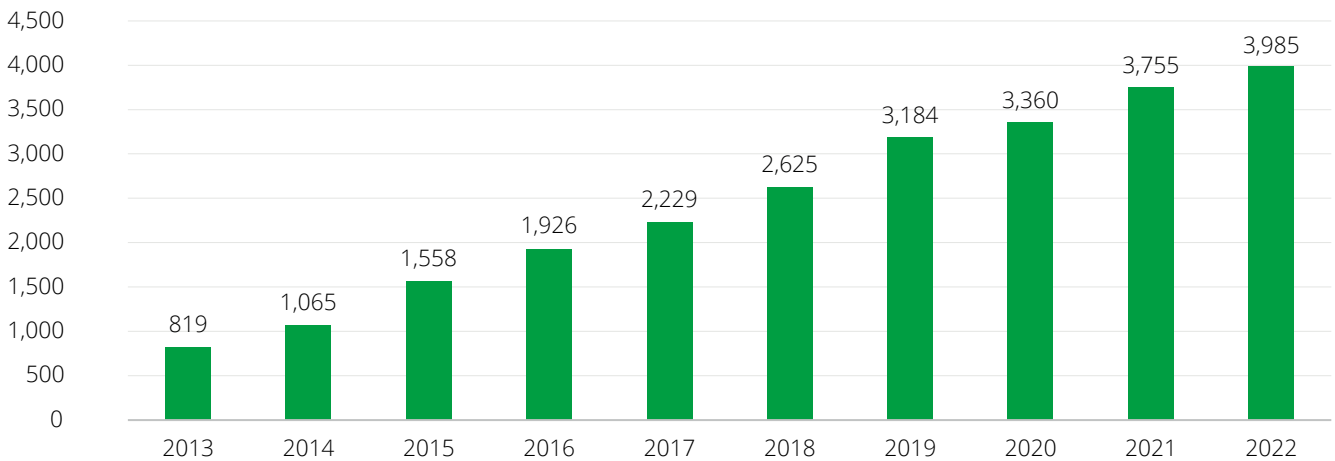
*The momentum of Hong Kong' burgeoning startup ecosystem remains intact with record high startup numbers and employment in I&T against a challenging external environment, slow economic recovery and rising interest rates that put downward pressure on market valuations. However, there has been a noticeable change in how its strengths are perceived as challenges and competition continue to arise*

**Hong Kong's vibrant startup ecosystem continues to thrive despite a slowing economy and interest**

**rate hikes that put downward pressure on valuations.** The number of startups in Hong Kong reached 3,985 in 2022 – a post-2013 record – although growth has slowed since 2021. Employment in the information technology industry has also reached new heights.

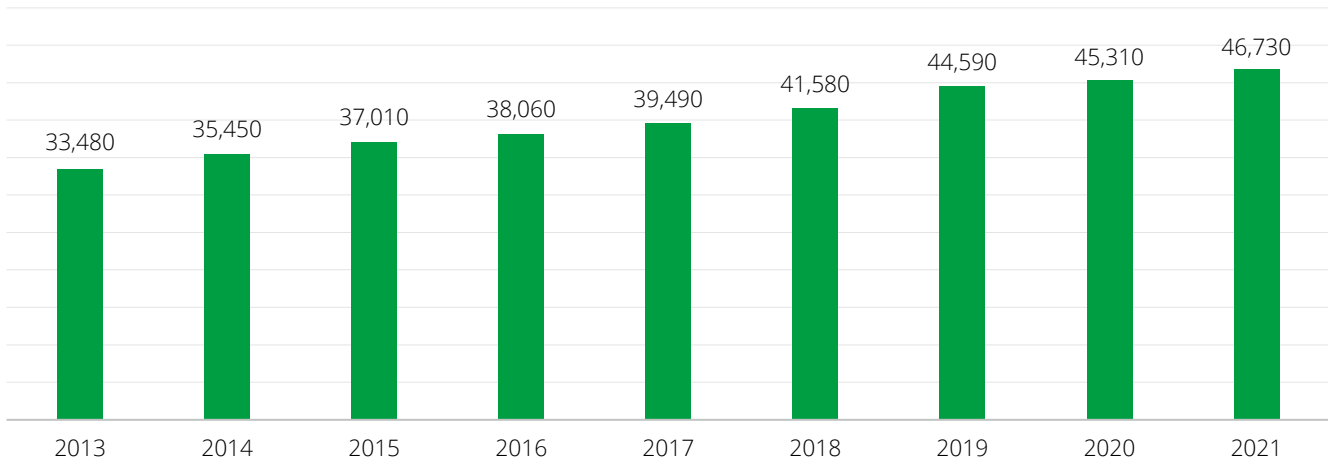
In terms of source of origin, 25% of startup founders are non-local. Among them, the Chinese mainland China ranks first (21%) by number of non-local startups, followed by the United States (16%) and the United Kingdom (13%), further reinforcing Hong Kong's unique role as a springboard for startups to launch into the GBA and other overseas markets.

**Number of startups in Hong Kong**



Source: Invest HK's 2022 Start-up Survey

### Employment number and growth rate of I&T industry

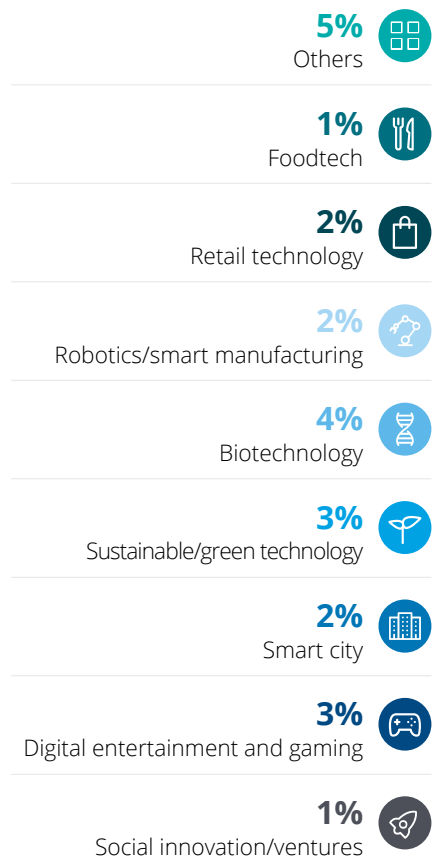
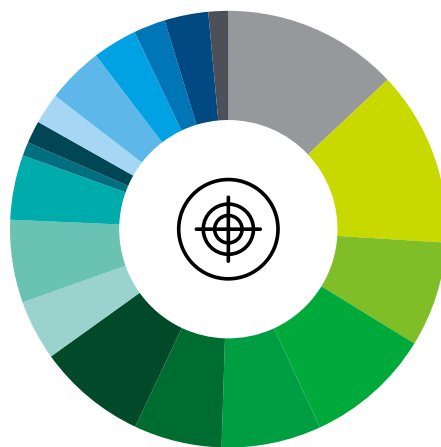
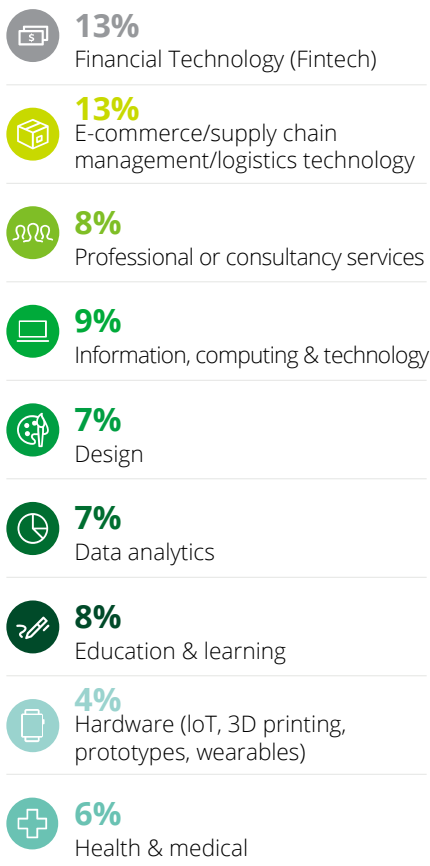


Source: Hong Kong Census and Statistics Department

**Fintech remains among the hottest sectors in Hong Kong’s startup scene, cementing the city’s position as one of the most conducive markets for global fintech startups looking for promising growth prospects.** The digitalisation wave accelerated

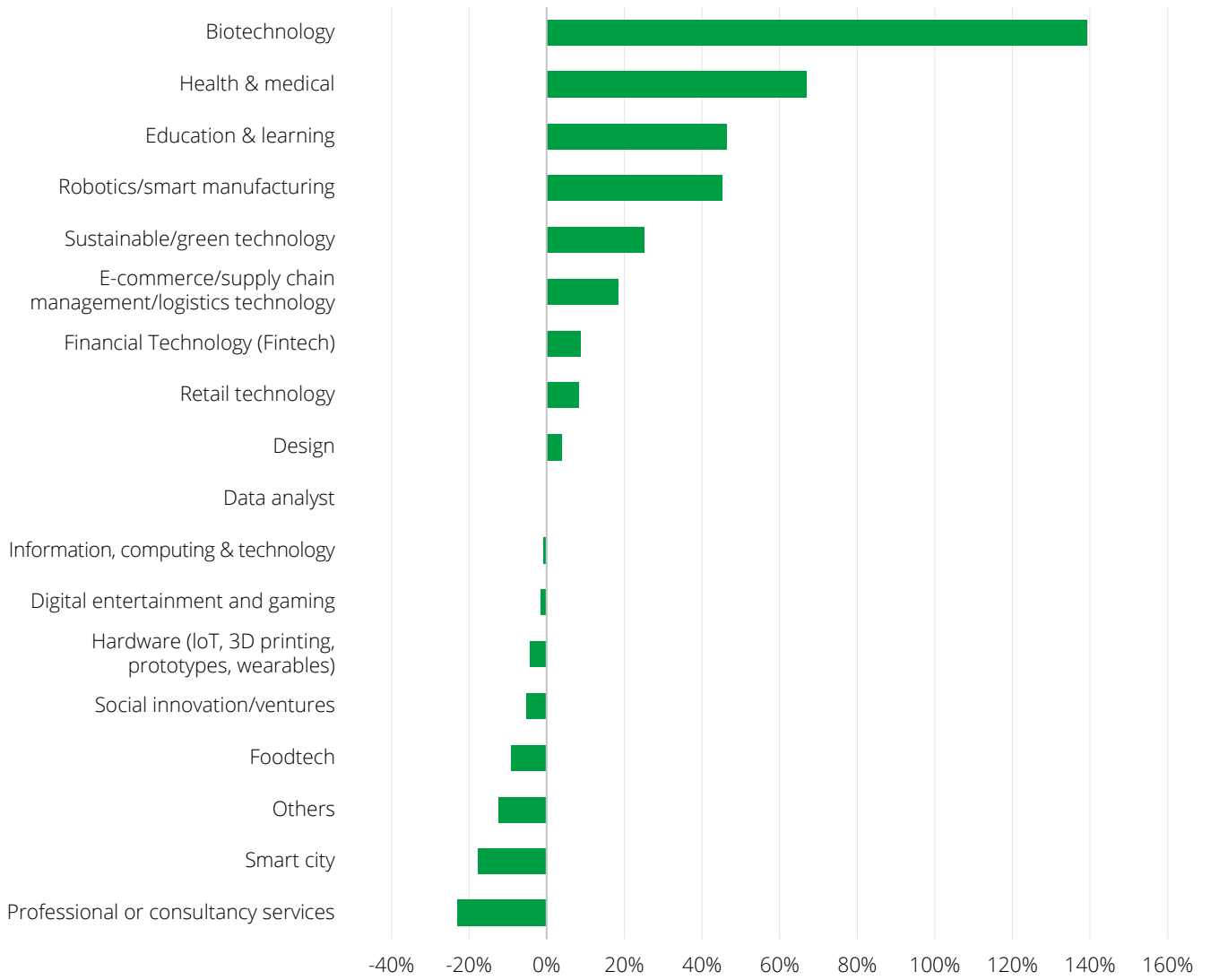
by COVID-19 has also prompted high growth in sectors such as biotechnology, healthcare and online education, which achieved year-on-year growth of 139%, 67% and 46% respectively in 2022.

### Hong Kong startup sector breakdown



Source: Invest HK’s 2022 Startup Survey

**Growth of startups by sector**



Source: Invest HK's 2022 Startup Survey, Deloitte

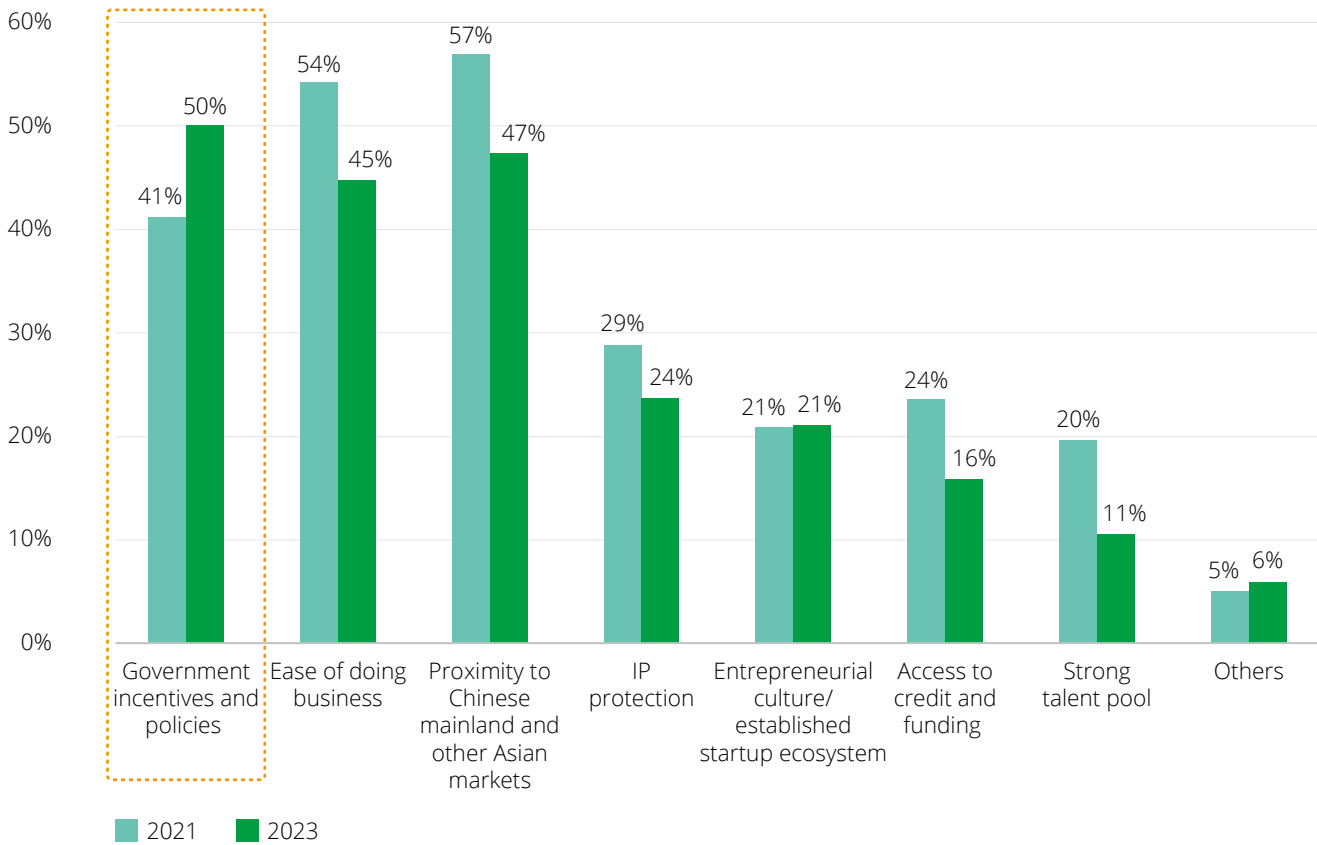
**Hong Kong is reinforcing its role as a global emerging innovation hub but also finds itself grappling with mounting challenges.**

The Government's unwavering support policy for startups has yielded positive results, with more than 60% of entrepreneurs identifying government incentives and policies as the top advantage of starting a business in Hong Kong, up from 42% in 2021. The overall recognition of Hong Kong's strength as a destination to start a business among entrepreneurs, nevertheless, has taken a downturn. For instance, the percentages of respondents choosing "proximity to the Chinese and Asian markets" and "access to credit and funding" as key advantages to starting a business in Hong Kong have dropped significantly compared with 2021.

In terms of challenges, the scarcity of innovative talent proves to be the top challenge facing Hong Kong's startup ecosystem, with over 63% of surveyed entrepreneurs saying it is difficult for startups to find sufficient talent in Hong Kong.

In the meantime, securing funding continues to be a critical hurdle for startups as about 53% of respondents are concerned there are not sufficient and accessible funding options. To compound matters, the recent economic uncertainties have further dampened entrepreneurs' confidence with about the same percentage of surveyed entrepreneurs (53%) believing that the current economic climate poses great challenges for startups as they have to navigate through difficult economic conditions.

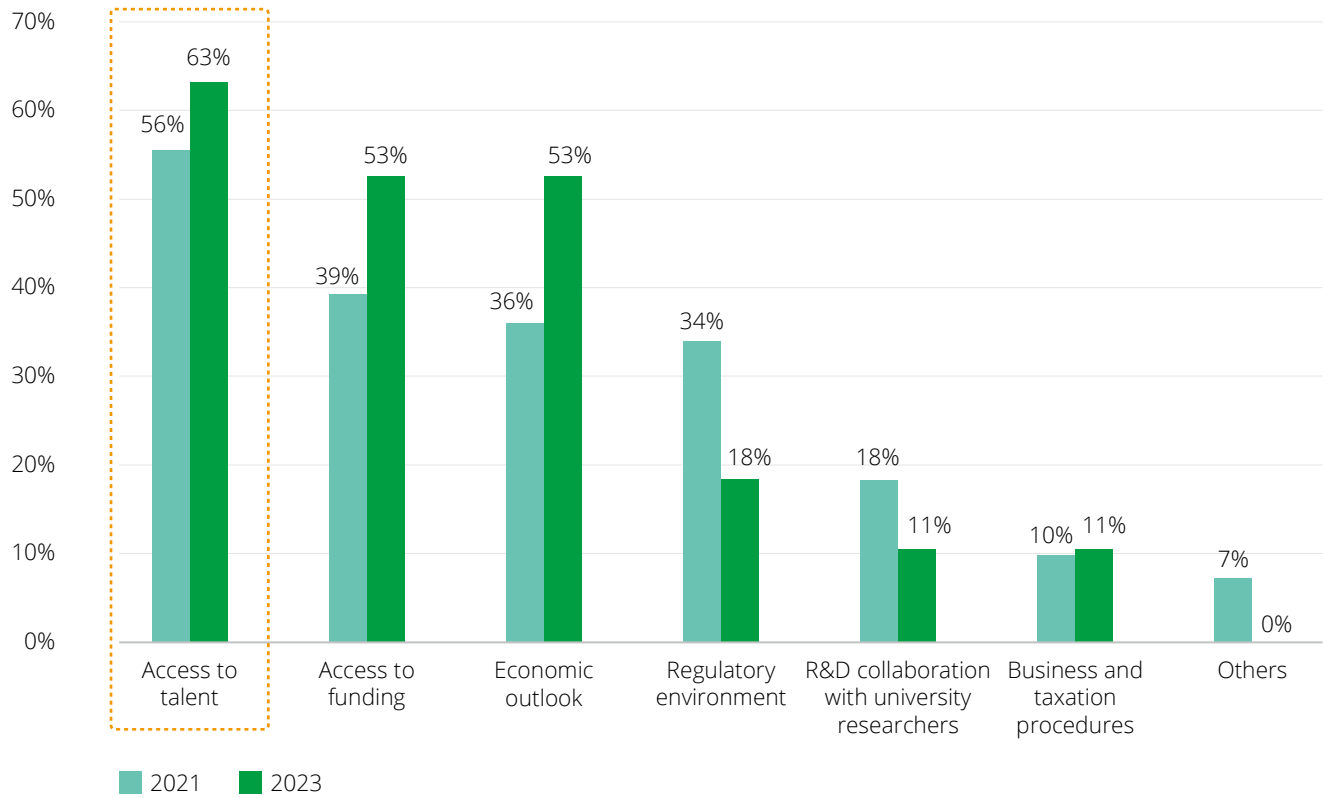
**Key advantages in starting a business in Hong Kong**



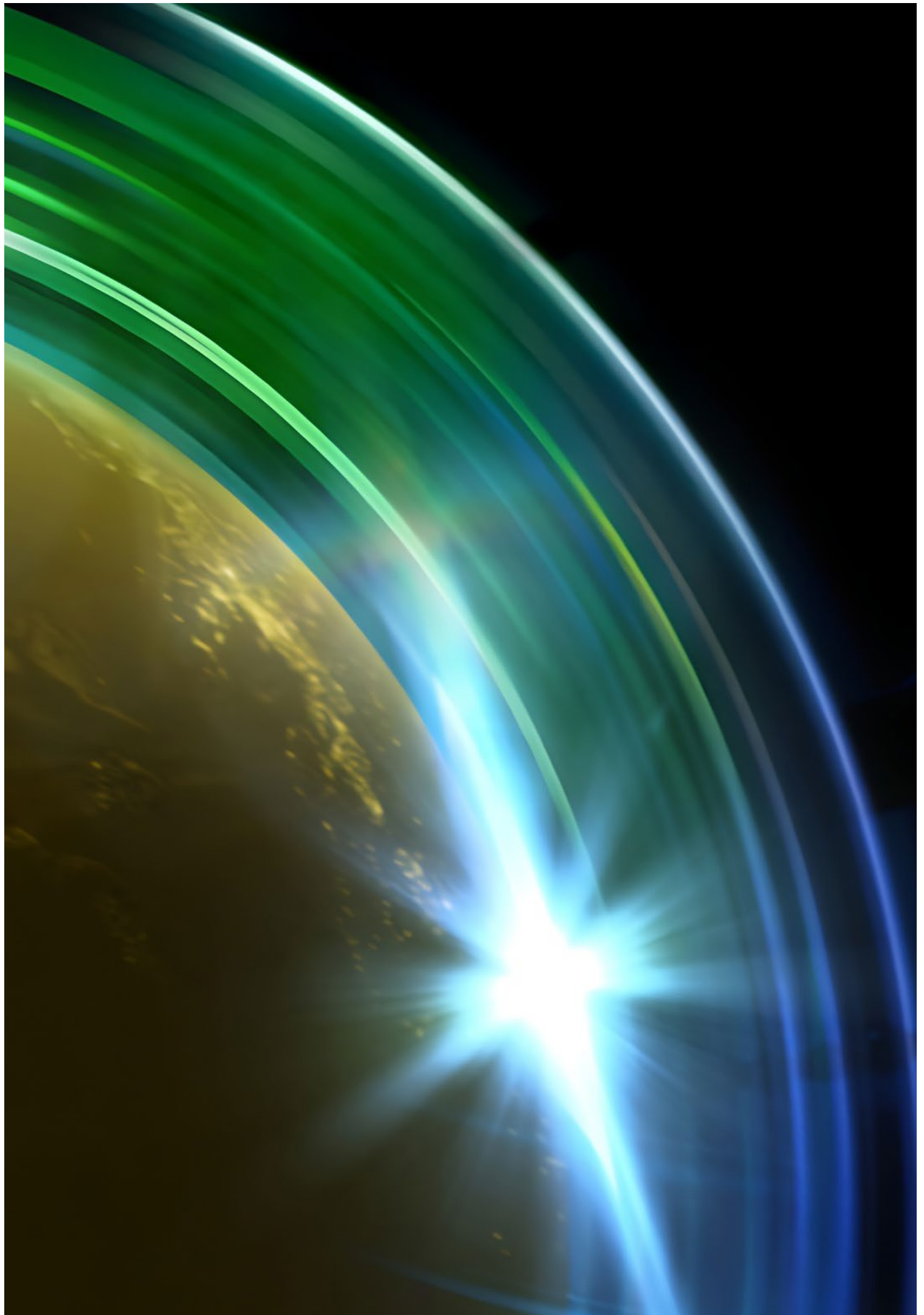
Source: Deloitte Entrepreneur Survey



### Key challenges in running a business Hong Kong



Source: Deloitte Entrepreneur Survey

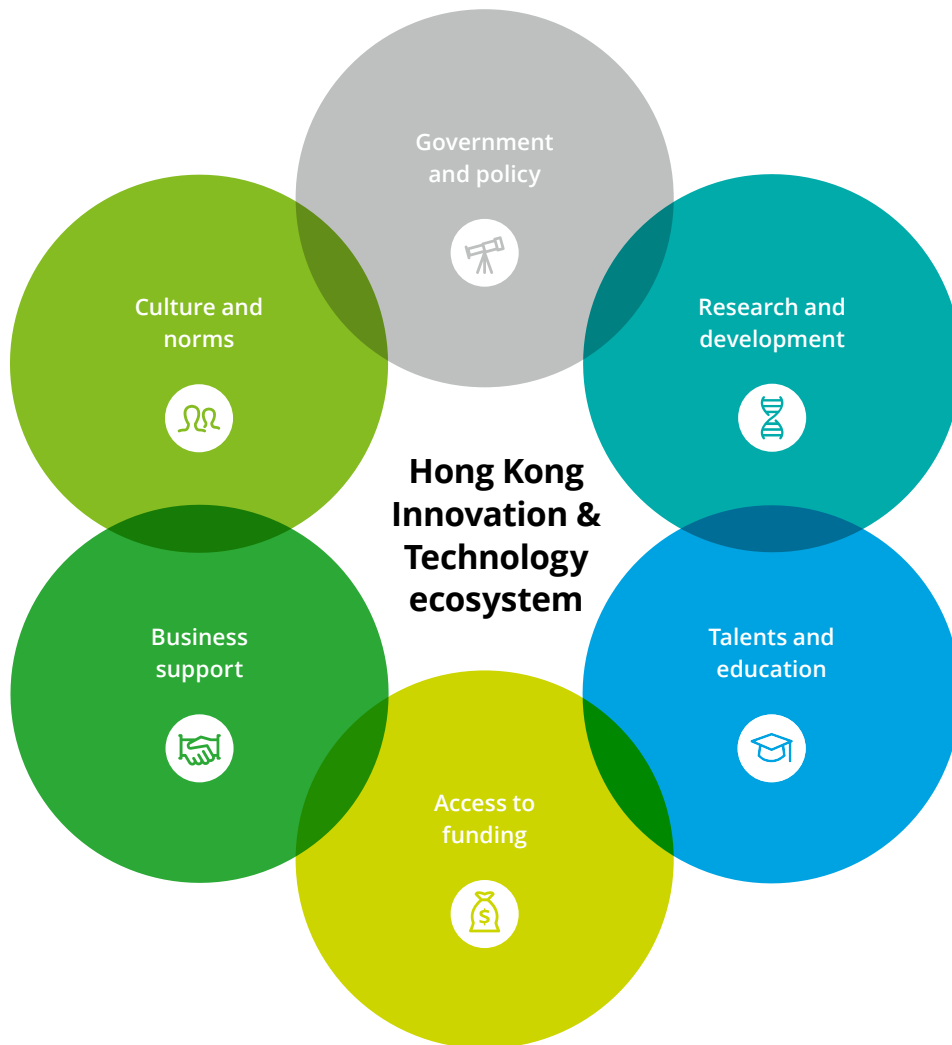


# Assessment of Hong Kong's I&T ecosystem

In this section, we embark on a deep dive through various elements of Hong Kong's thriving entrepreneurial landscape, from the latest I&T policy that fuels local innovation and wide range of funding

that caters to the needs of companies at various stages, to the supportive ecosystem that nurtures the flourishing of entrepreneurial spirit.

## Analysis framework of Hong Kong's I&T ecosystem





## Policy: From minimum intervention to active planning

*The Hong Kong Government has shifted to a “pragmatic” approach in developing the I&T industry, including strengthening its own guiding role and setting out measurable long-term targets. The forward-looking I&T Blueprint is considered vital for the resilient development of the I&T sector against the backdrop of a challenging external environment. Going forward, it is crucial for the Government to establish a robust framework of assessment to ensure that its I&T policies are effective and efficient*

**The Blueprint unprecedentedly sets forth a systematic plan and clear roadmap for Hong Kong’s I&T development in the next 5-10 years, signalling a departure from the established approach of “letting the market decide” and reinforcing government’s guiding role in I&T development.** Successive Hong Kong governments have attached great importance to the development of Innovation & Technology as it is considered vital for Hong Kong’s economic transformation and a more diversified, vigorous future. The 14th Five-Year Plan supports Hong Kong to transition into an international Innovation & Technology hub against the backdrop of intensified regional technology competition.

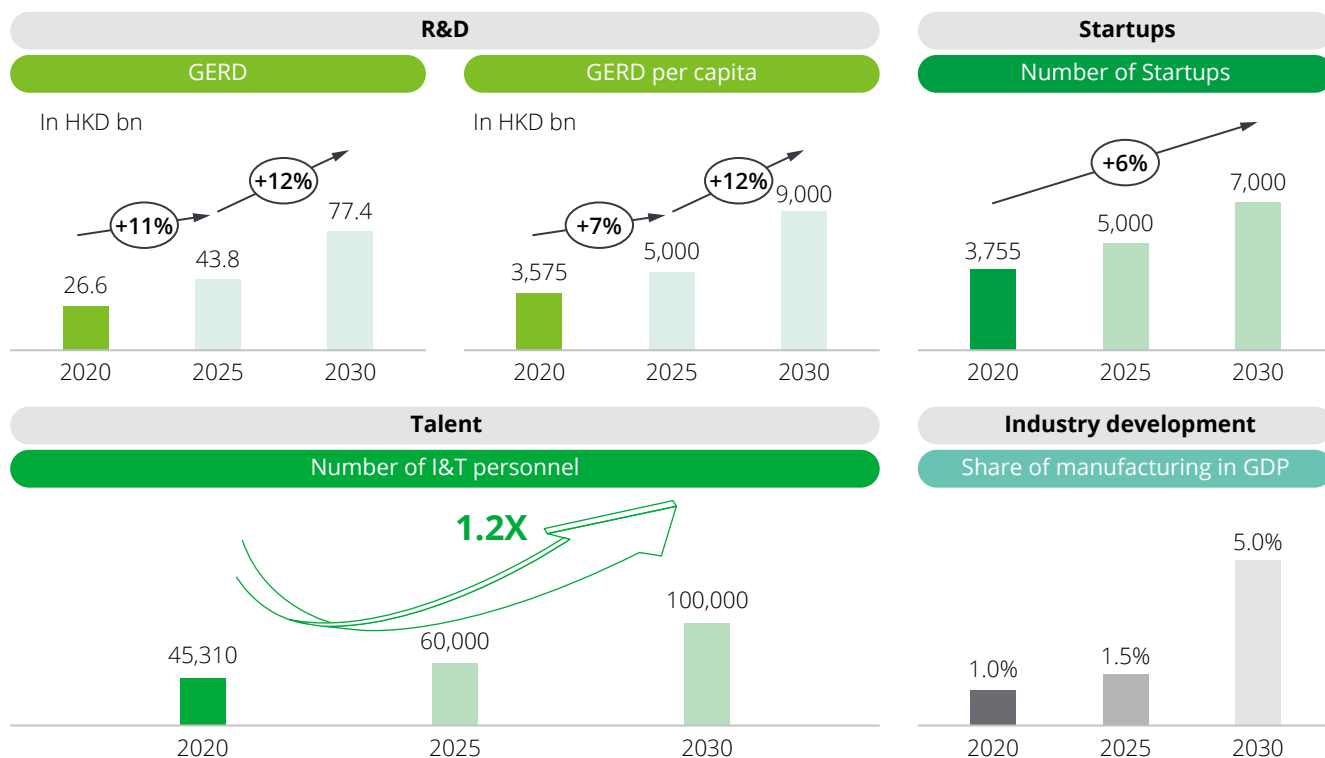
In support of this vision, the Government introduced the Hong Kong Innovation & Technology Development Blueprint – the first systematic and practical industrial plan in Hong Kong since the establishment of the SAR. It sets out four development directions, including "enhance the I&T ecosystem and promote new industrialisation", "expand the I&T talent pool", "promote digital economy development and develop Hong Kong into a smart city" and "proactively integrate into the overall development of the country, and consolidate Hong Kong’s role as a bridge connecting the mainland and the world"<sup>5</sup>.

The Blueprint also signals a departure from the established approach of "letting the market decide" and "avoiding picking the winners". The Hong Kong Government proposes to focus on development of four strategic I&T sectors: life and health sciences, artificial intelligence and data science, advanced manufacturing, and new energy technologies.

To track the progress of its policy, the Hong Kong Government has set up mid-to-long term development goals for its I&T sector:

- Raising R&D expenditure as a share of GDP from the current 0.99% to 2% by 2030;
- increasing the number of start-ups from more than 3,700 to about 7,000;
- growing the number of employees in the IT industry from more than 45,000 to at least 100,000; and
- boosting the manufacturing sector’s contribution to GDP from 1% to 5%.

## Measurable indicators tracking progress of I&T development



Source: Hong Kong I&T Development Blueprint, IMF.  
 Note: GERD refers to gross domestic expenditure on R&D

**From "re-industrialisation" to "new industrialisation", Hong Kong aims to build a domestic manufacturing cluster to better capitalise on R&D results.** The Hong Kong Government has reached a consensus on the mutually reinforcing relationship between I&T and the manufacturing sector. That is, the manufacturing industry has persistent, strong demand for scientific research and provides fertile ground to transform R&D results into applied products.

Against this backdrop, the Blueprint promotes the development of "new industrialisation", which has two main agendas. First, the Blueprint recognises the value of "Made-in Hong Kong" brands and has instigated support for the revitalisation of Hong Kong's traditional industry by leveraging leading-edge technologies such as IoT, AI and big data to upgrade existing processes. Meanwhile, the Hong Kong Government has said it will pour resources into nurturing advanced manufacturing industries such as new energy and life and health technology, by incubating domestic startups that show high potential to scale-up and attracting world's leading companies to establish manufacturing bases in Hong Kong<sup>6</sup>.

The success of "new industrialisation" hinges on various factors, including industrial clusters, land supply and human resources. To tackle the infrastructure challenge, the Blueprint promotes the concept of "pilot trials" for the first time, encouraging enterprises to invest in establishing industrial R&D and design centres and pilot transformation bases, developing infrastructure for common technologies, and participating in international and domestic product pilot trials and tests.

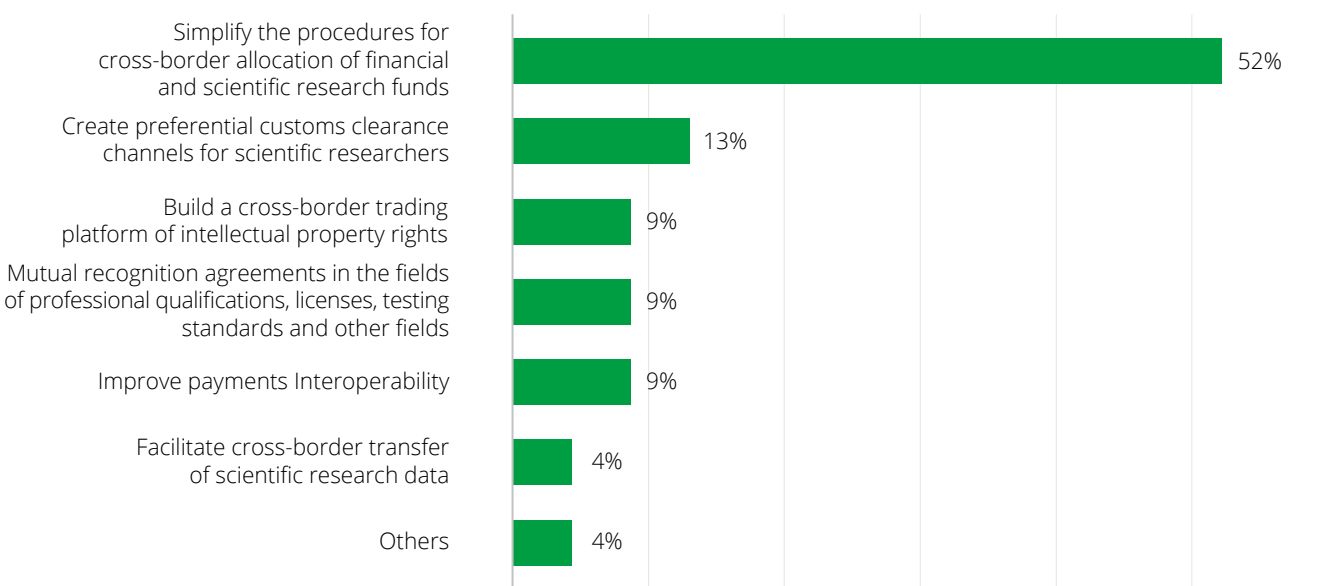
**Expedite policy formulation to further integrate into China's I&T agenda and deepen cooperation across GBA cities to maximise synergy.** In the 2023 Policy Address, the Hong Kong Government proposed to simplify cross-border exchanges of talent, capital and data to create a deeply integrated environment for R&D collaboration within the Lok Ma Chau Loop. These measures include arrangements to simplify access for researchers, facilitate the exchange of cross-border R&D funding, and support exchanges of data and samples (including clinical biological samples) collected for research or experimentation. The Government also proposed to establish a partnership with the

international clinical trial centre at Shenzhen Park in the Loop to build a one-stop trial support platform that facilitates cross-border R&D activities among medical research institutions.

Over the past three years, Chinese mainland governments have deployed measures that break free from existing institutional barriers. In September 2023, the PRC Government released high-level planning for the Shenzhen Park in the Loop, laying out its development directions, positions and infrastructure planning<sup>7</sup>.

To foster synergy in the GBA, bold institutional reforms to accelerate R&D collaboration are keenly anticipated. For instance, Hong Kong scientific researchers need to co-operate with mainland institutions to apply for national research funding. Cross-border exchange of research samples, experimental reagents, genetic information and other materials is still cumbersome. Furthermore, discrepancies between Hong Kong and Shenzhen in registration and listing procedures for pharmaceutical products and medical devices have hampered R&D collaboration<sup>8</sup>.

**Areas that need to improve to better integrate into the GBA**



Source: Deloitte Entrepreneur Survey

In conclusion, while the Hong Kong Government has made extensive investment to promote the local I&T ecosystem, there is a need to establish a robust evaluation mechanism and a collaborative approach to ensure the effectiveness of these policies. This could start with setting clear targets that can be measured to gauge the progress and effectiveness of I&T policies.

Apart from the four broad targets laid out in the Blueprint, we recommend the Government introduce a more comprehensive set of evaluation indicators, drawing on the experiences of innovative countries abroad. These indicators could include measures such as R&D investment (public and private sector expenditure), R&D personnel (doctorate graduates in STEM majors), innovation activities (number of SMEs with product innovations, PCT/trademark/design patent

applications) and innovation impact (employment in I&T, sales/exports of innovative products)

By ensuring that investments in I&T yield tangible results and contribute to overall economic development, the Government can gain valuable insights into the effectiveness of their policies and identify areas that require further improvement.

We also recommend the Government solicit feedback from entrepreneurs, researchers and industry representatives through regular consultation sessions, surveys and forums. Through actively engaging with stakeholders, the Government can gain a better understanding of the challenges and opportunities in the local I&T ecosystem and make informed adjustments to their policies accordingly.



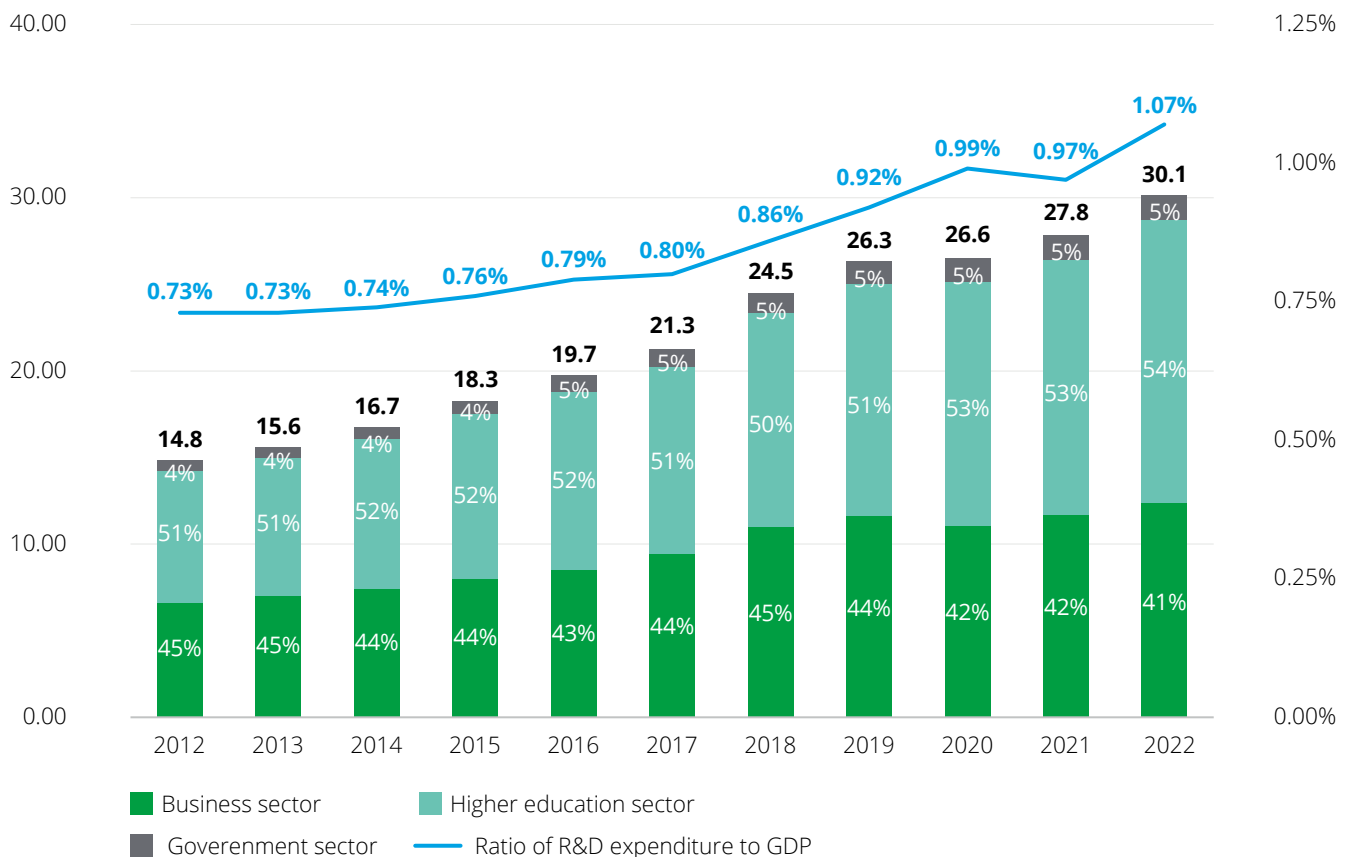
## R&D: Prioritise commercialisation to enhance innovation output

*Hong Kong boasts world-leading R&D strength but few of its scientific results have been commercialised, leading to low innovation output compared with other developed economies. To enhance the economic output of its I&T sector, the Hong Kong Government has steered its focus to promoting academic-industry collaboration, attracting world's leading tech companies, and boosting the commercialisation of R&D results*

**Hong Kong's gross expense on R&D has achieved incremental growth in the past five years, but its absolute amount and intensity (R&D expenditure as a share of GDP) are still lower than those of OECD countries.** For instance, Hong Kong's GERD-to-

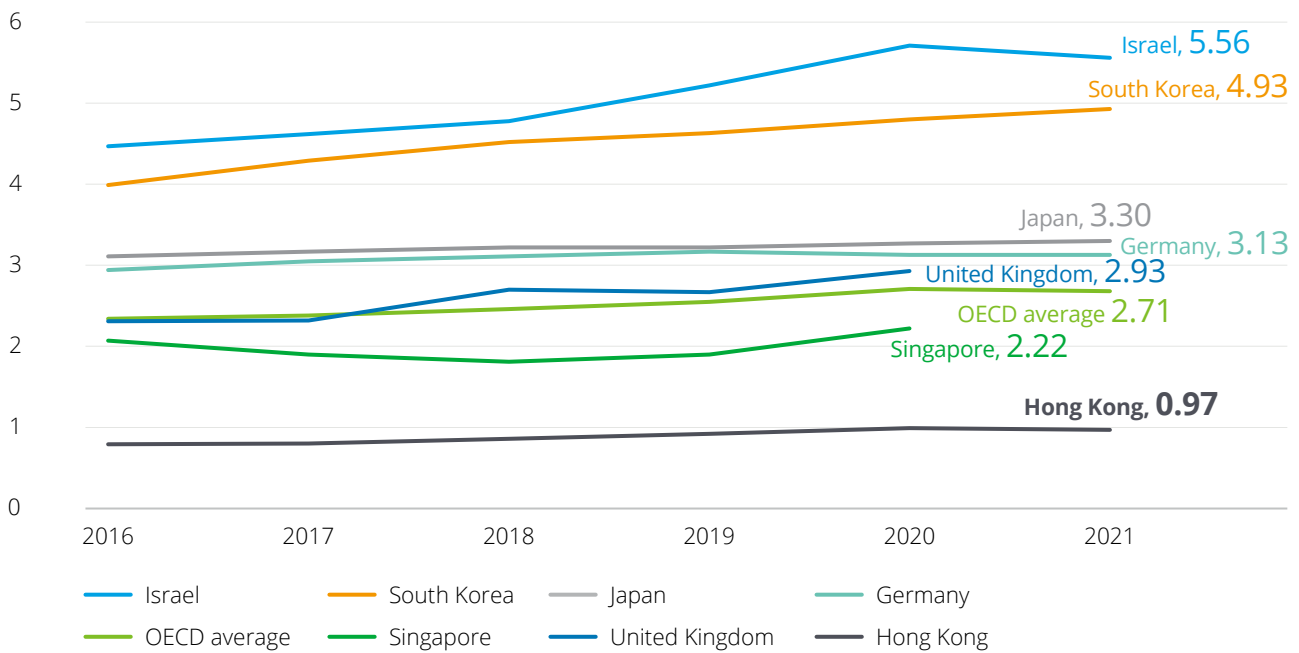
GDP ratio not only lags those of many Chinese mainland cities but also economies of a similar size to Hong Kong, such as Singapore and Israel. Regions boasting strong innovation capacity tend to have R&D expenditure as a share of GDP close to 3%.

**Gross domestic expenditure on R&D by sector (in HKD billion), 2011-2022**



Source: The Census and Statistics Department

Gross domestic spending on R&D as % of GDP, 2016-2021



Source: OECD

To close the gap, the Hong Kong Government set a goal in the I&T Blueprint to increase R&D to 1.3% of GDP by 2025 and 2% by 2030. In the 2023-24 Budget, HKD6 billion will be allocated to fund universities and research institutions to establish research facilities and HKD3 billion will be distributed to promote basic research in leading-edge technology such as AI and quantum technology. In addition, Hong Kong has reaffirmed its commitment to providing advanced infrastructure and equipment for local R&D activities. For instance, the Hong Kong Microelectronics Research and Development Institute will be established in 2024, providing advanced infrastructure and hardware facilities for microelectronics companies. Cyberport will also establish an AI supercomputing centre in phases, with a view to supporting the huge demand for computing

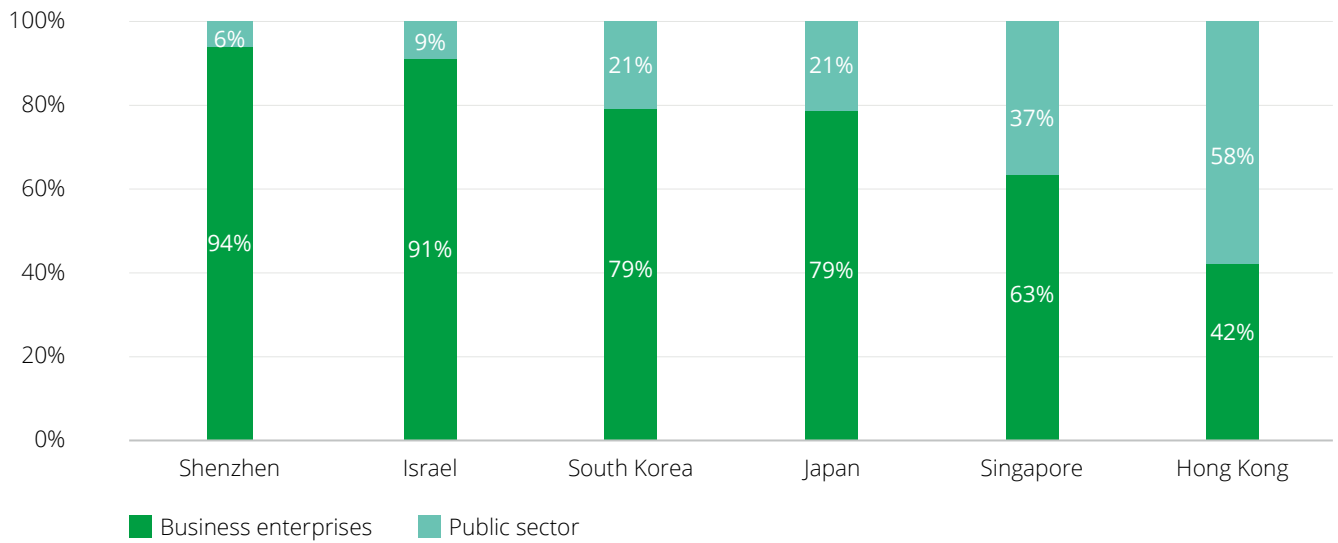
power from R&D and related sectors and promoting industry development<sup>9</sup>. This coordinated investment plan highlights the Government’s commitment to strengthen Hong Kong’s R&D prowess and promote breakthroughs in areas that are considered vital in global technology competition.

**R&D activities are mainly led by tertiary institutions, with the local industry having limited willingness and incentive to conduct R&D.**

In Hong Kong, universities play a predominant role in overall R&D activities, accounting for 53% of GERD. The business sector accounts for 41% of GERD, whereas in most industrialised countries it usually contributes the largest share of R&D expenditure.



**Comparison of R&D expenses by performing sectors in selected locations in 2021**



Source: OECD, Singapore Department of Statistics, Census and Statistics Department of Hong Kong, Statistics Bureau of Shenzhen Municipality

The potential of innovation capabilities of local business remains largely undervalued. Hong Kong is home to more than 360,000 small and medium-sized enterprises (SMEs), accounting for over 98% of the total number of businesses and employing about 45% of the private sector workforce<sup>10</sup>. However, the proportion of business enterprises engaged in technological innovation is relatively low in Hong Kong. According to a survey

conducted by the Census and Statistics Department, in 2020 a mere 1% of enterprises (about 4,100) in Hong Kong conducted in-house R&D, and only about 14% (about 600) had cooperative arrangements with other organisations<sup>11</sup>. This is largely due to factors such as lack of incentives to innovate, limited scale of the Hong Kong market, the long pay-back period for R&D investment and risk-averse sentiment that innovative activities usually fail.



To encourage private sector spending on R&D, the Government should incentivize large overseas companies to invest in Hong Kong. With the help of these overseas companies, the issue that Hong Kong has a limited market size for innovative products and services could also be addressed.

**Prof. Xu Yan**  
 Professor & Associate Director  
 Center for Business Strategy and Innovation, HKUST Business School

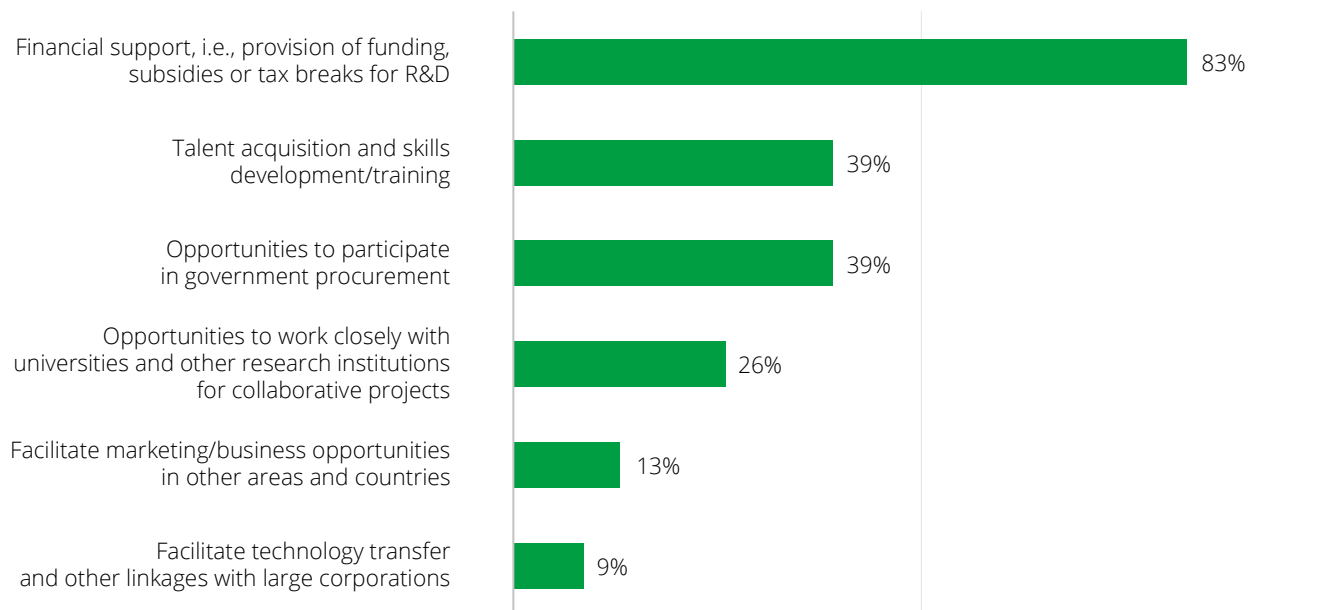


## Turning innovations into wealth: How to fill the commercialisation gap in Hong Kong

Over the years, the Government has implemented various measures to stimulate private enterprises to conduct R&D activities, including dedicated funding schemes under the Innovation & Technology Fund and providing tax reductions and other incentives<sup>12</sup>. As of the end of 2022, the Innovation and Technology Fund has approved funding of HKD32.8 billion across 17 funding schemes, about half of which is reserved to support R&D. This has helped expand the sources of funds for enterprises to carry out R&D.

Our survey found that the most effective measure (83%) to support R&D efforts is financial support, including direct funding, subsidies and tax reductions for research and development. Following that is the provision of talent recruitment and skills development/training (39%) and the chance to participate in government procurement (39%).

### Initiatives that are most needed to support companies' R&D efforts



Source: Deloitte Entrepreneur Survey

To increase R&D to 1.3% of GDP by 2025 and 2% by 2030 is an ambitious plan. To achieve that goal, the Government should motivate the private sectors to invest more in R&D and give more resource not just to the supply side, e.g., universities, but also the demand side – subsidising SMEs could be an effective measure. Once SMEs can benefit from I&T, they will gradually spend more on R&D and an eco-system can be built.

The Hong Kong Government can draw on best-practice experience from innovation countries. For instance, the UK Government has rolled out various policy instruments

to stimulate R&D among SMEs, including a supportive procurement program that allows SMEs to secure government contracts, loans and grants that reward those with game-changing or disruptive ideas, and tax reduction schemes tailored for SMEs. The Hong Kong Government needs to further maximise tax benefits for R&D by SMEs by reviewing government's procurement to make it more accessible for SMEs that bid for public contracts, increasing the participation of SMEs in major innovation projects and matching them with relevant solution providers.



I believe two words perfectly encapsulate Hong Kong's flourishing innovation landscape today – resilience and opportunity. During challenging economic times, a strategic permission-based innovation model, coupled with visionary policies like Hong Kong's I&T Blueprint, lays the essential groundwork for nurturing and sustaining the innovation journey. Hong Kong boasts a deep and diverse I&T ecosystem, featured by an unparalleled landscape of capital-rich investment.

Additionally, it is home to a thriving R&D and startup community, offering extensive potential for corporate innovation partnerships, thus speeding up the process of bringing innovations to commercialisation. Not only does Hong Kong serve as a vital two-way fast lane, connecting the globe with Pan Asian growth opportunities, but it also enjoys a unique advantage by having direct access to the GBA innovation powerhouse, China, and beyond, extending its reach to the rapidly expanding markets of Southeast Asia.

### **Albert Wong**

CEO, Hong Kong Science and Technology Parks Corporation

#### **Reverse the trend of "high R&D investment but low output" by expediting the translation of scientific research into industrial innovations in Hong Kong.**

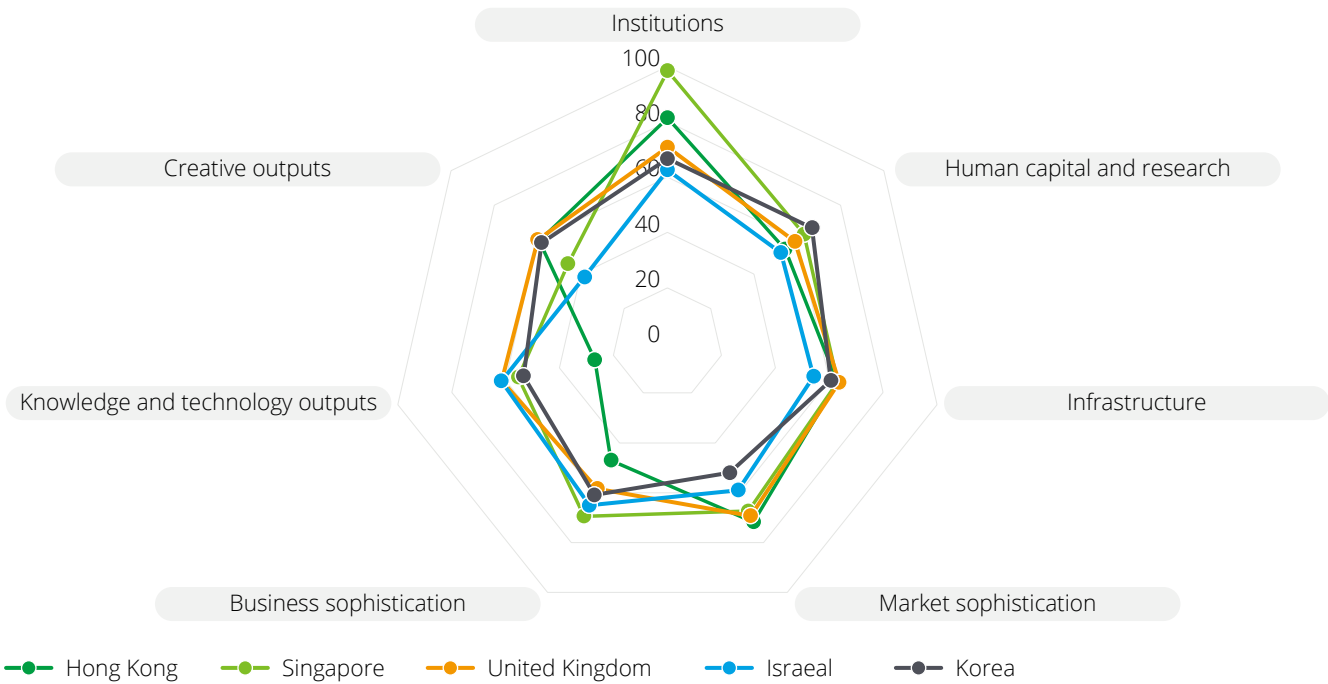
Despite extensive R&D input, innovation output in Hong Kong has not been rewarding in term of the economic value generated by the I&T sector.

According to the 2022 Global Innovation Index Report released by the World Intellectual Property Organization (WIPO), Hong Kong has performed decently in overall rankings of innovation and technology capacities, ranking 17th among 132 global economies in 2023. However, there has been little improvement in innovation output. Hong Kong ranks 24th in the

innovation output indicator, having experienced a notable decline from 14th in 2020.

The "knowledge and technology outputs" sub-indicator is the main drag on Hong Kong's ranking, at 62nd in the world, and Hong Kong is only in the mid-low range of multiple sub-indicators that confer economic benefits, including "patent applications by residents per USD100 billion of GDP", "proportion of high-tech manufacturing", "knowledge in trade", "proportion of property rights-related income", "proportion of exports of high-tech products", and "proportion of exports of information technology services".

Chart: Comparison of GII Report Sub-Indicator Scores of Hong Kong and its OECD peers



Source: WIPO, Global Innovation Index 2022

The Hong Kong Government has announced various initiatives, attempting to fill the commercialisation gap, including strengthening industry-university-research cooperation, increasing the land and infrastructure necessary for scientific research transformation,

attracting leading overseas enterprises to establish R&D centres in Hong Kong, and further integrating with the mainland, especially by matching industry needs across GBA cities with R&D resources within local universities.



With a strong commitment to bridging the academia-industry gap, City University of Hong Kong, through HK Tech 300, the largest university-based entrepreneurship programme in the region, actively supports students and researchers on their journey towards transforming innovative ideas and research results into tangible technological and commercial successes, and contributing to the future of innovation and social-economic development in Hong Kong and beyond.

**Prof. Michael Yang**  
 Senior Vice-President (Innovation and Enterprise)  
 Yeung Kin-Man Chair Professor of Biomedical Sciences  
 City University of Hong Kong





To further promote the translation of R&D, The Chinese University of Hong Kong has established CUHK Innovation Limited to bridge the gap by actively collaborating with investors and corporates to support spinoffs, startups and entrepreneurs. This diverse group not only brings capital but also extensive experience and valuable connections in different fields.

**Joyce Ng**

Managing Director and Chief Investment Officer, CUHK Innovation Limited



In the 2022 Policy Address, the Government said it would establish a HKD10 billion RAISE+ to provide matched-basis funding to no less than 100 university R&D teams with the potential to become startups, aiming to promote scientific research in the academic community. In addition, working with the Key Enterprise Introduction Office and HKD5 billion Strategic Innovation and Technology Fund, Hong Kong-Shenzhen Innovation and Technology Park in the Lok Ma Chau Loop will from 2024 provide the land and space needed for I&T development, focusing on attracting outstanding enterprises and talent from industries such as life and health technology, AI and data science, advanced manufacturing, and new energy technology to establish operations in Hong Kong.

In addition to injecting financial resources, a systematic mechanism is also needed to make sure RAISE+ is developing on the right track to achieving the expected outcome. This entails defining clear, measurable objectives and indicators for the collaboration, creating platforms that facilitate continuous communication and cooperation among industry, academia, and research institutions, and maintaining transparency on the progress of the collaboration to build trust and support for the initiative among the public and stakeholders.



After years of exploration, HKX has successfully helped scientists, doctoral researchers, and students in universities turn their ideas, inventions, and breakthroughs into commercially viable products. Moving forward, efforts should be put into helping the R&D community to improve their products, expand their market coverage, and scale their businesses by connecting them to supply chain expertise in the GBA cities.

**Prof. Guanhua Chen**

Co-founder, HKX





## Talent and education: Taking a long-term approach to reverse the brain drain

*The latest "talent trawling" campaign has achieved visible progress in alleviating the current talent shortage. However, talent attraction can only provide a temporary fix. In the long run, Hong Kong needs to tap into its local talent pool and attract more homegrown STEM students to engage in I&T fields. This can be achieved by establishing an overriding body that coordinates STEM education resources and collaborating with I&T enterprises to provide STEM students with more job opportunities*

**The Hong Kong Government's efforts to attract talent to Hong Kong have achieved noteworthy results.** Hong Kong society is grappling with a persistent, acute talent crunch, and the I&T sector is no exception. According to Hong Kong Science and Technology Parks Corporation, demand for I&T talent in Hong Kong is expected to reach 200,000 by 2030, yet the current supply of I&T talent is just 30,000-40,000. This needs to grow by at least 20% a year to fill the gap.

The Hong Kong Government has adopted a multi-pronged approach to building the I&T talent pipeline. It has embarked on bold reform by introducing more aggressive "talent trawling" measures to fill the talent void. Change starts with optimising various talent admission schemes.

Previous talent admission policy not only imposed restrictions on quota and specific industries but was also associated with a complicated certification procedure and cumbersome application process, which undermined Hong Kong's attractiveness to overseas talent. For example, the Quality Migrant Admission Scheme (QMAS) sets an annual limit of 4,000 people

(increased from 2,000 in 2021<sup>13</sup>), and the approval process takes about nine months to a year. The Technology Talent Admission Scheme (TechTAS) used to require employers to commit to hiring an equal number of local people for I&T related jobs when submitting applications for overseas and mainland talent quotas. These restrictions increased costs for local technology startups substantially. As a result, the TechTAS policy has attracted merely 620 R&D professionals to Hong Kong in the three years since its implementation<sup>14</sup>.

In the 2022 Policy Address, the Hong Kong Government announced it would temporarily lift annual quota restrictions on QMAS and cancel the local employment requirement for TechTAS. It also launched a new program, the Top Talent Pass Scheme, with eligible talent entitled to spend two years exploring opportunities and work in Hong Kong. In the 2023 Policy Address, the Government promised to step up its efforts by expanding the list of universities that meet the requirements of the Top Talent Pass Scheme and launch incentives including tax rebates for housing purchases to lure more talent to settle in the city.

## Reform of Hong Kong’s talent admission schemes

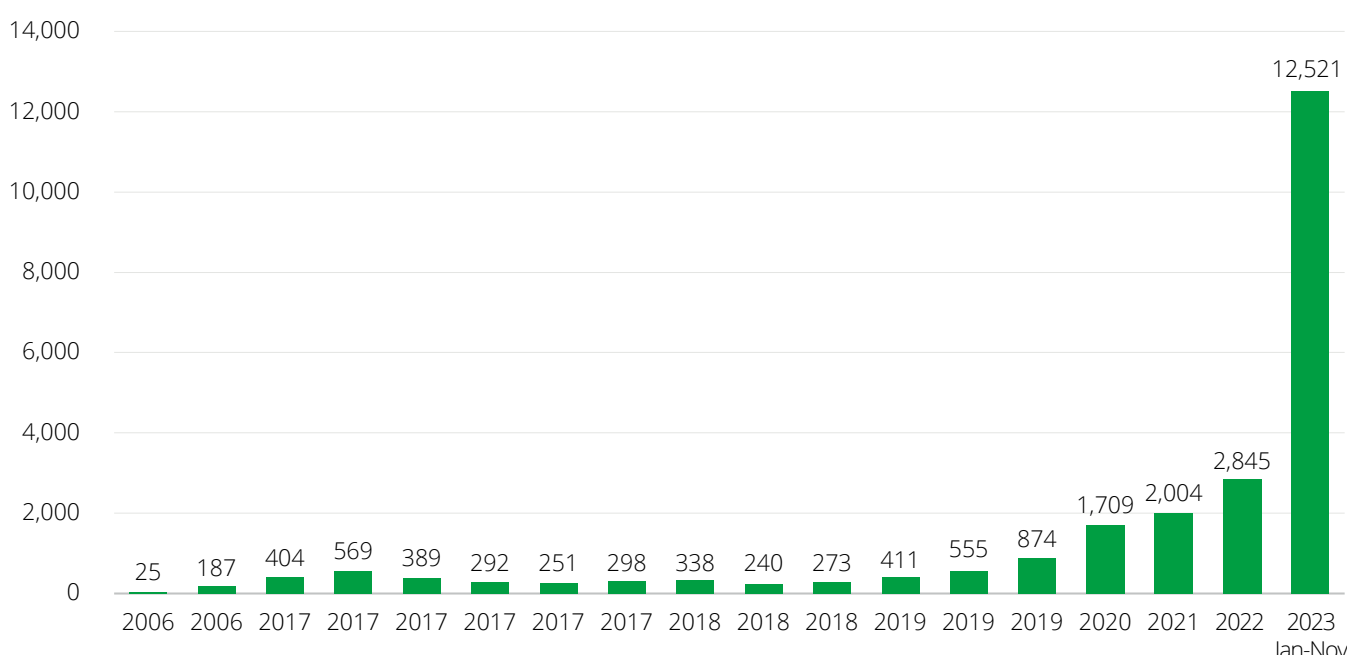
Talent admission schemes	Previous version	After the reform
<b>Quality Migrant Admission Scheme</b>	<ul style="list-style-type: none"> <li>• Sets an annual limit of 4,000 people, and the approval process takes about nine months to a year</li> </ul>	<ul style="list-style-type: none"> <li>• Lifts annual quota restrictions</li> </ul>
<b>Technology Talent Admission Scheme</b>	<ul style="list-style-type: none"> <li>• Requires employers to commit to hiring an equal number of local people for I&amp;T related jobs when submitting applications</li> </ul>	<ul style="list-style-type: none"> <li>• Cancels the local employment requirement</li> <li>• Extends the quota validity period and expand the coverage to more emerging technology areas</li> </ul>
<b>Non-local Graduates Scheme</b>	<ul style="list-style-type: none"> <li>• Allows non-local graduates to stay in the city for 12 months after graduation</li> </ul>	<ul style="list-style-type: none"> <li>• Extends the period to two years, and expands the scope to graduates in the GBA campuses</li> </ul>
<b>General Employment Policy</b>	<ul style="list-style-type: none"> <li>• Requires employers to prove difficulty in hiring locally</li> </ul>	<ul style="list-style-type: none"> <li>• Relaxes restrictions on local hiring requirement</li> </ul>

Source: The Chief Executive’s 2022 Policy Address

The above-mentioned measures have achieved positive results. Hong Kong has approved a total of more than 120,000 applications under various talent admission schemes as of the end of November 2023, far exceeding its annual target of talent admission. Notably, the number of approved QMAS admissions skyrocketed to 12,521 in the first 11 months of 2023<sup>15</sup>, more than

four times the full-year total in 2022. Meanwhile, approximately 48,000 applications for the Top Talent Pass Scheme have been approved since its launch earlier in 2023<sup>16</sup>. The Hong Kong Government aims to attract at least 35,000 professionals every year from 2023 to 2025, or 105,000 in total, through various talent attraction programs.

### Statistics on applications approved under QMAS



Source: Hong Kong Immigration Department



In December 2023, the Government also stepped up its efforts by announcing the new Capital Investment Entrant Scheme (CIES)<sup>17</sup>. Under the initiative, eligible investors who make investments of HKD30 million or above in assets such as stocks, funds, bonds can apply for entry into Hong Kong. Of the investment, HKD3 million needs to be put into a new CIES Investment Portfolio which will be set up and managed by the HKIC to make investments in companies/projects with a Hong Kong nexus, with a view to supporting the development of I&T.

However, it will take time to determine the effectiveness of these talent schemes in alleviating the I&T talent shortage in Hong Kong as some of the talent admission programs lack an industry focus, so might not necessarily translate into local I&T labour force. For instance, less than a quarter (23%) of the talent applying for QMAS are from an information technology background<sup>18</sup>. That is reflected in our survey, with less than 10% of entrepreneurs finding either QMAS or the Top Talent Pass Scheme attractive in filling the talent void.

While attracting talent is one aspect, the key to the success of talent attraction policies lies in the ability to retain talent. About 58% of surveyed entrepreneurs believe the high cost of living remains the top challenge when attracting talent to the city, though the ratio has decreased from the 2021 Survey's 80%. The Hong Kong Government has introduced various initiatives to lower the cost of living. For instance, the 2022 Policy Address provided qualified foreign talent with a refund of the extra stamp duty on purchases of residential property upon receiving their Hong Kong permanent identify

cards. There is also the "InnoCell" talent apartment project at Science Park, which provides housing benefits for overseas talent. However, the 500 available spots are limited to the partner companies in the park itself, far from sufficient to support the accommodation of I&T talent in Hong Kong<sup>19</sup>.

Hong Kong's neighbour Shenzhen used to provide subsidies for top-notch talent from worldwide through initiatives like the "Peacock Plan". The plan offers benefits such as housing subsidies, children's education, employment opportunities for spouses, and medical insurance, making talented individuals feel more secure in developing their careers in Shenzhen.

The Hong Kong Government needs to strengthen its resources to retain overseas talent. This can include allocating some land in the Northern Metropolis for talent apartments, expanding the qualification scope of existing talent apartments, providing a housing subsidy, and establishing a designated fund to provide education and medical allowances for overseas talent.

**However, talent attraction can only be a temporary fix. In the long run, Hong Kong needs to tap into local sources of talent as the city risks losing its competitive edge if it cannot build a diverse, future-proof and sustained talent pipeline to develop emerging technologies. This should include increasing the prospects of the I&T sector and driving STEM education reform with a more comprehensive approach.**





It is encouraging to witness the growing popularity of start-ups and entrepreneurship, particularly within local universities. However, according to the survey, a significant of 63% of entrepreneurs expressed difficulties in finding adequate talents.

While the Government has implemented several schemes in attracting overseas talents, the mismatch between the supply and demand shall be paid with extra attention. One solution is to train more local STEM talents as is suggested by the report, while also exploring innovative approaches, such as flash organization, to tap into global talents in this era of open innovation.

**Prof. Xu Yan**

Professor & Associate Director

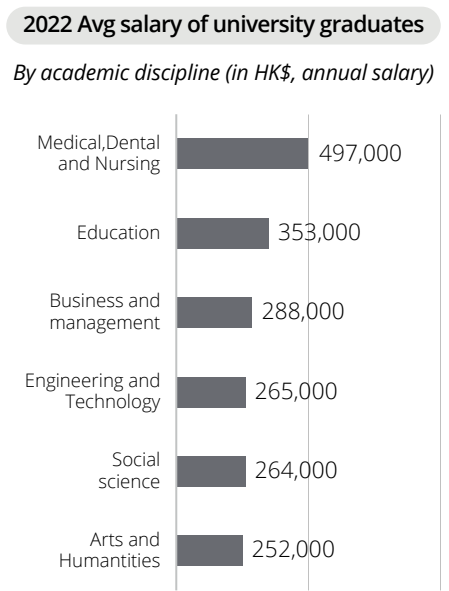
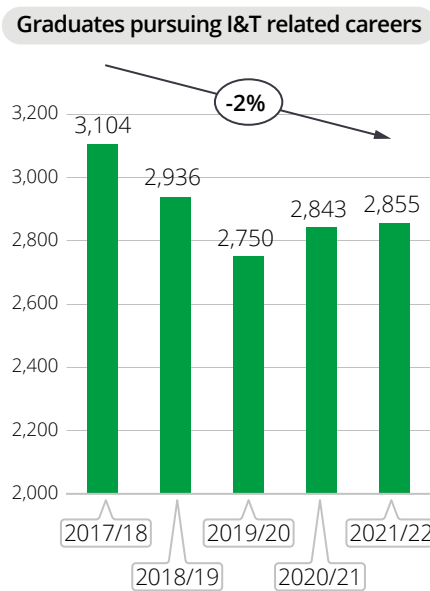
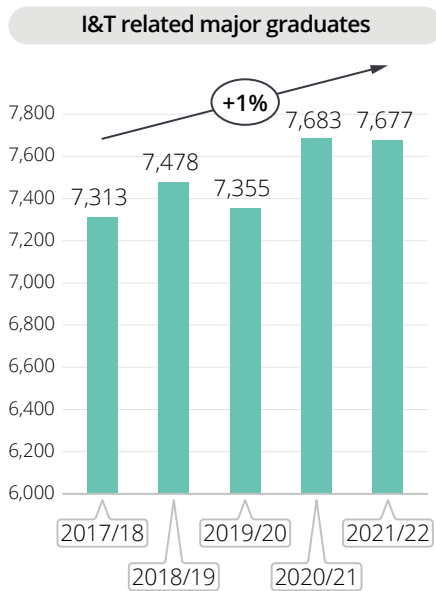
Center for Business Strategy and Innovation, HKUST Business School



There is a short supply of I&T talent in Hong Kong, with the number of undergraduate students pursuing STEM-related majors having shown little growth over the past five years. The problem is amplified by the

fact that STEM graduates are earning less than their counterparts in the business and medical and dental disciplines.

**Supply of local STEM discipline graduates**



Source: University Grants Committee

To attract university students to explore opportunities in I&T, the Innovation and Technology Commission (ITC) launched the STEM Internship Scheme in June 2020 to enable more university students in STEM disciplines to experience I&T-related work during their studies. The Government has also launched different schemes to assist youth to pursue a career in I&T after graduation. For instance, the Research Talent Hub under the ITC funds enterprises and research institutions to recruit holders of bachelor's, master's and doctoral degrees to conduct R&D for a maximum of three years, and has funded 6,260 researchers over the past five years.

Stakeholders suggest that Hong Kong needs to further promote talent exchange between academia and industry by offering more government-sponsored internship and placement programs that help students develop skills that are relevant to industry needs and allow companies to nurture and lock in future talent. Given Hong Kong has a limited number of large technology firms, the Government can facilitate and subsidise local students to take internship or graduate recruitment programs at large I&T firms overseas.

To exposure students to I&T at a younger age, the Government has stepped up its efforts to promote STEM education by incorporating STEM courses into primary and secondary schools' core curricula. The latest Policy Address announced that at least 75% of publicly-funded schools will implement enriched coding education at the upper primary level and introduce I&T elements such as AI into the junior secondary curriculum by the 2024-25 school year.

Starting from the current school year, all publicly-funded primary and secondary schools must designate coordinators to plan Science, Technology, Engineering, the Arts and Mathematics (STEAM) education in and beyond the classroom. At least 75% of publicly funded schools are required to arrange professional STEAM training within the next two school years<sup>20</sup>.

In tertiary education, the 2023 Policy Address set a target of getting 35% of students in institutions funded by the University Grants Committee (UGC) to study STEAM subjects. The Government will also gradually increase the number of UGC-funded research postgraduate places from the current 5,600 to 7,200 in the 2024-25 academic year<sup>21</sup>.

Apart from the above measures, a comprehensive approach is also needed to make a true difference in STEM education. This includes setting up an overriding body that is responsible for developing guidelines for all primary and secondary schools, revising the curriculum to emphasise real-world applications, promoting hands-on learning, and investing in professional development for teachers. It is also recommended to establishing assessment indicators for STEM education, including the skills required to be mastered at different grade level and levels of proficiency.



### Funding: Stimulate private investment amidst funding winter

*Hong Kong boasts a diverse financing environment that caters to the funding needs of startups at various stages of growth. However, the VC funding winter has hemmed in the city's thriving I&T ecosystem. To reverse this lack of funding, the Hong Kong Government has taken a more proactive approach by establishing an overarching investment vehicle to increase the availability of long-term funding for R&D intensive high-growth startups and provide reassurance to institutional investors with government credibility*

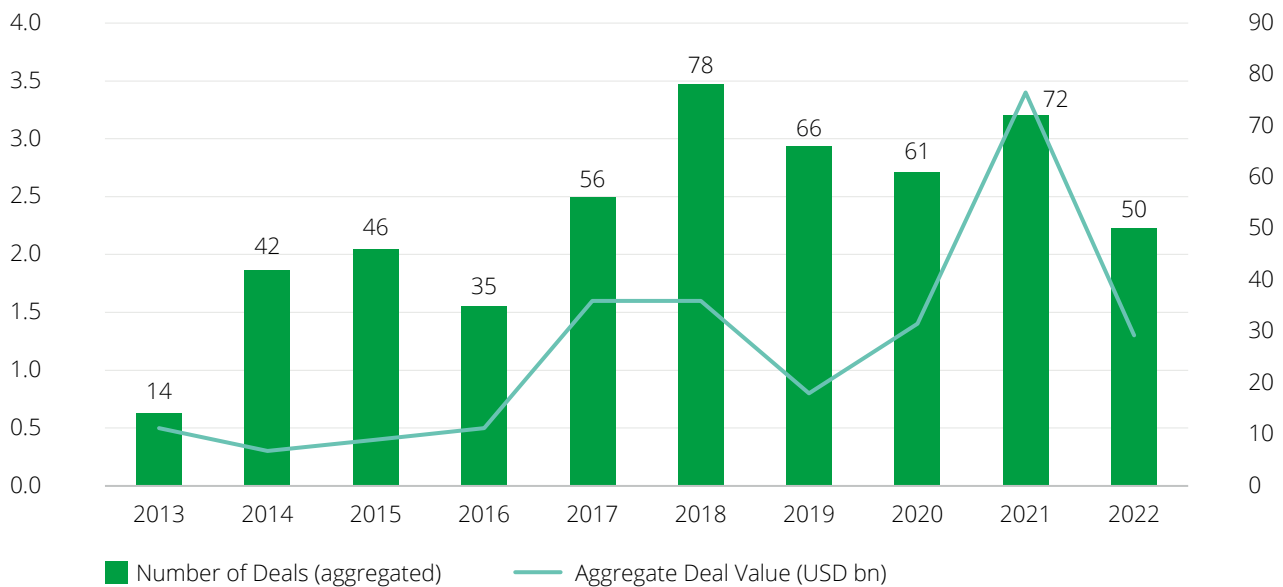
**The financing environment for startups has improved substantially in Hong Kong. However, the startup financing ecosystem still remains uneven, with a notable gap identified in early-stage funding. The ongoing funding winter has further dampened the prospect of fund raising for high tech companies in Hong Kong.**

According to Preqin data, VC-backed funding activity in Hong Kong has dropped to its lowest in six years amid escalating economic headwinds as global interest rate

hikes exacted a heavy toll on liquidity. There were just 50 funding deals in Hong Kong in 2022, down 31% from the previous year's level, while deal value shrank by 62% to USD1.3 billion. This downtrend continued in 2023, with just USD691 million of funding as of October.

The slowdown in VC/PE investment is partially due to a challenging macro-economic environment, global interest-rate hikes and wary investors as they are faced with a difficult exit environment. This was, however, in line with similar declines elsewhere.

**Venture capital investment in Hong Kong (Number of deals and aggregated deal value)**



Source: Preqin, Deloitte

The financial services sector was Hong Kong's investment highlight in 2023, raising USD544 million across 11 deals. Fintech took up the lion's share of this, with total deal value of USD458 million, followed by insurance-tech at USD62 million. Hong Kong's fintech startup landscape remains vibrant, with a diverse range of participants and a handful of VC firms keen to invest across different stage of companies. The city has increasingly become the location of choice for global fintech and related companies looking to expand into Asian markets.

**VC funding fell across all stages with early-stage funding posting substantial declines in deal volume and value.** As of October 2023, early round investment backed by venture capital saw the biggest year-on-year declines in deal volume and value, with just 10 deals, halving from 19 in 2022, and USD51 million of investment, a decline of 75% from 2022.



The shortage of early-stage funding for startups in Hong Kong remains an ongoing concern. A viable solution is for the Government to establish a 'fund of fund' (FoF) that acts as a limited partner and invests in other matching funds focused on tech-related early-stage investment. The FoF can play a positive role in channelling private capital into the local I&T ecosystem. The matching funds will also bring in outstanding startups and research teams from overseas or the Mainland, thereby enhancing Hong Kong's overall technology level. The blossoming of tech investment will further encourage a concentration of professional private investors and fund management talents, promoting the development of the city's fund industry.

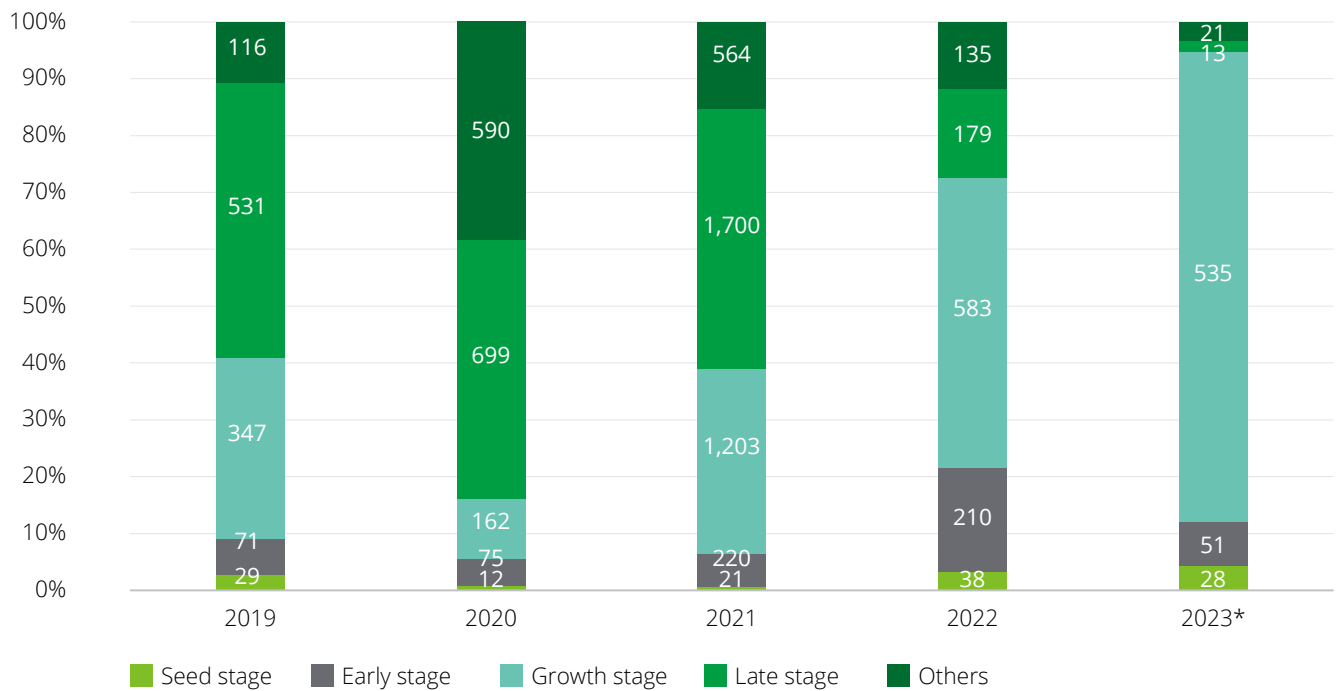
**The Honourable Duncan Chiu**  
HKSAR Legislative Council Member  
Technology & Innovation Constituency



The plummeting valuations of tech companies has also reduced the number of lucrative exit opportunities, with many well-funded investors shying away from large, late-stage deals. In 2023, mega-round venture capital investment (deal size larger than USD100

million) plummeted in Hong Kong, with just one single VC-backed company, down from 12 in 2021 and four in 2022, managing to secure over USD100 million in financing.

**Venture capital investment by different funding stages (in HKD million)**



Source: Preqin, Deloitte

Note: seed stage includes seed and grant, early stage includes angel and series A, growth stage includes series B and C, late stage includes series D, E, F and pre-IPO

**Government funding for startups has garnered widespread recognition. In the long run, the Hong Kong Government needs to make its funding schemes more accessible by streamlining application processes and continuing to diversify funding channels for startups by boosting investors’ risk appetite and unlocking untapped source of capital.**

The Hong Kong Government has provided various funding programs to meet the funding needs of startups at different stages. The ITC manages the Innovation and Technology Fund – which has grown significantly, with its annual expenditure increasing from HKD700 million in 2013/14 to HKD4.8 billion in 2020/21. The fund comprises 17 different funding schemes, offering a wide range of financial support to the local tech and innovation ecosystem. Government funding schemes are highly rated as about 39% of the entrepreneurs we surveyed expressed their satisfaction with the level of public funding support available.

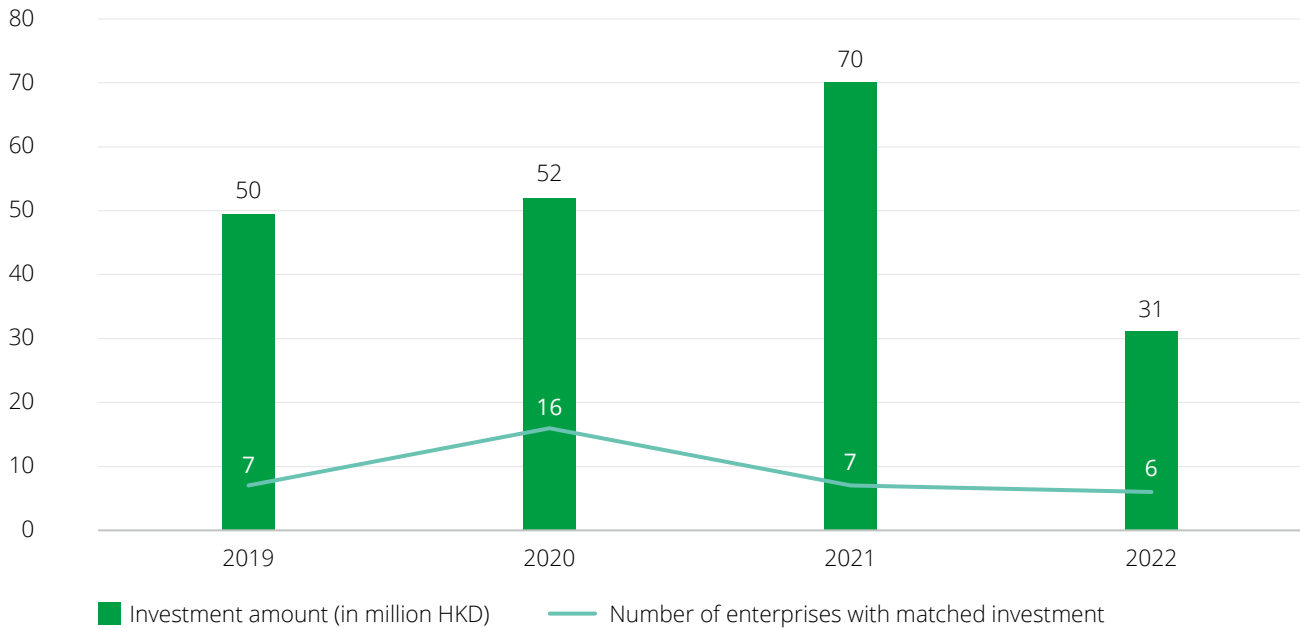
However, there is a consensus among some entrepreneurs that the process of securing government funds can be further streamlined or have its threshold lowered. Several founders of startups we interviewed

said the process of obtaining funds from the Government can be lengthy and the requirements can be quite stringent. As a result, some companies find it easier to secure funding from alternative sources such as venture capitalists or government support in other locations like Mainland China or Singapore.

In addition, government funding generally focuses on pre-A stage of startups whereas there is a concerning funding gap in early to growth stage. This is evident from our survey, with about 50% startups at the roll-out stage believing there is insufficient venture capital available in Hong Kong.

To foster a robust startup financing landscape, stimulating the supply of venture investment is crucial. The Hong Kong Government in 2016 launched the HKD2 billion Innovation and Technology Venture Fund (ITVF) to invest in startups alongside institutional investors on a matching ratio of 1:2 (government: venture capital). As of the end of October 2023, the ITVF has invested approximately HKD209 million in 27 local startup companies across various fields, including supply chain management, e-commerce, fintech, biotech and AI. It has attracted around HKD2.1 billion from private capital since its introduction.

### Innovation and Technology Venture Fund (2019-2022)



Source: The Innovation and Technology Commission

However, the current investment amount represents less than 10% of the total fund size. It is also important to note that the ITVF mainly functions as a passive investor and typically engages in co-investments based on invitations

from its partners. Moreover, the lengthy decision-making process of the Government and the focus on financial returns also does not align with the funding needs and longer return cycles of R&D intensive startups.



MTR Lab is committed to supporting the growth of the I&T sector in Hong Kong. We are not just financiers, and are dedicated to providing a friendly environment to scale up innovations, such as by providing connection to a trusted ecosystem and helping early-to-growth-stage companies explore a wide range of use cases for their solutions.

**Michael Chan**  
Managing Director, MTR Lab Company Limited



Having recognised this, in the 2022 Policy Address, the Government proposed to establish the HKIC, a government-owned investment arm that combines various funding resources and started to drive I&T investment in a more centralised and organised manner.

The HKIC will operate four funds with a combined size of HKD62 billion. These funds include the HKD30 billion Co-Investment Fund to attract businesses to the city and the HKD32 billion Hong Kong Growth Portfolio<sup>22</sup>. The Growth Portfolio comprises a HKD5 billion Strategic Tech Fund to support local startups and attract foreign

tech companies to establish a presence in Hong Kong and a HKD5 billion Greater Bay Area Investment Fund with a focus on initiatives and companies that benefit the whole GBA.

The HKIC will not only place investment directly into potential projects but also invest through a co-investment scheme by injecting money into General Partners selected from more than 40 institutional funds. It has also identified four major investment areas: financial technology, AI, biotechnology and advanced manufacturing<sup>23</sup>.



The prospects for the innovation economy in Hong Kong remain hugely exciting, leveraging the combination of Hong Kong's depth of talent, and its unique role as a gateway between mainland China and the world.

HSBC's USD3 billion New Economy Fund represents our demonstrable commitment to providing capital to fuel innovation and technology companies across the various phases of their growth journeys. In a challenged fundraising environment, investors and startups alike are seeking alternative sources of capital to support growth, reduce dilution, enhance returns, instill financial discipline and diversify the capital structure. Our New Economy Fund satisfies these very needs, including through the provision of venture debt to companies across Greater China.

**Thomas Elliott**

Managing Director, Head of Client Coverage, Commercial Banking, Hong Kong, HSBC



Given the recent dismal in fundraising environment due to high inflation, rising interest rates, and geopolitical factors, start-ups are facing an unprecedented challenging market. However, the Hong Kong Government has created a favorable environment for both startups and investment companies. The setup of the HKIC not only showcases Government's unwavering support for I&T but also is expected to significantly boost the confidence of private investors.

**Lap Man**

Co-founder and Managing Partner, Beyond Ventures



The establishment of a government-led fund signify a more proactive approach to guiding investment in the innovation and technology sector, through which they can ensure that investment strategies are aligned with the city's long-term development needs and goals. This also sends a strong message to both domestic and foreign investors that the Government is actively supporting and advancing the local I&T ecosystem, which will help expand funding channels for local startups and increase the risk appetite of venture capitalists.

In the future, HKIC needs to design appropriate performance metrics, hire professional teams with

appropriate skills and mindsets, and deploy a nuanced risk management model that enables the institution to offset the risk of investing in startups with uncertain returns.

Meanwhile, the HKIC should be assessed beyond conventional indicators such as return on investment (ROI) and instead incorporate broader impact metrics into its investment assessment criteria, taking into account the social and economic benefits its investment portfolio can bring. Key indicators can include the number of jobs created, industrial diversification and technological competitiveness.



## Business support: Adapt support service to meet startups' lifecycle needs

*Although the number of Hong Kong's incubators continues to grow, local startup's recognition of the business support they receive has declined. To further strengthen the innovation and technology industry, business support for entrepreneurial activities needs to be more flexible and tailored to cover the full spectrum of startups.*

**Recognition of business support for startups have shown slight decline, with stakeholders emphasising the importance of extending support services and resources to meet incubatees' lifecycle needs.**

Hong Kong has witnessed a significant increase in the number of incubators, with a total of 132 shared workspace/incubators/accelerators in Hong Kong as of 2022 – double the number in 2017. In 2021, a total

of 320 enterprises have settled in Hong Kong Science Park, an increase of 30% annually. Among them, 20% are from the Chinese mainland or overseas. In addition, over 430 startups have graduated from its incubation program. Enterprises incubated in the park have raised a total of HKD780 million in funding over the past year. The number of companies incubated in another public-run incubator – Cyberport – has exceeded 1,900, with cumulative funding for startups surpassing HKD35.7 billion.



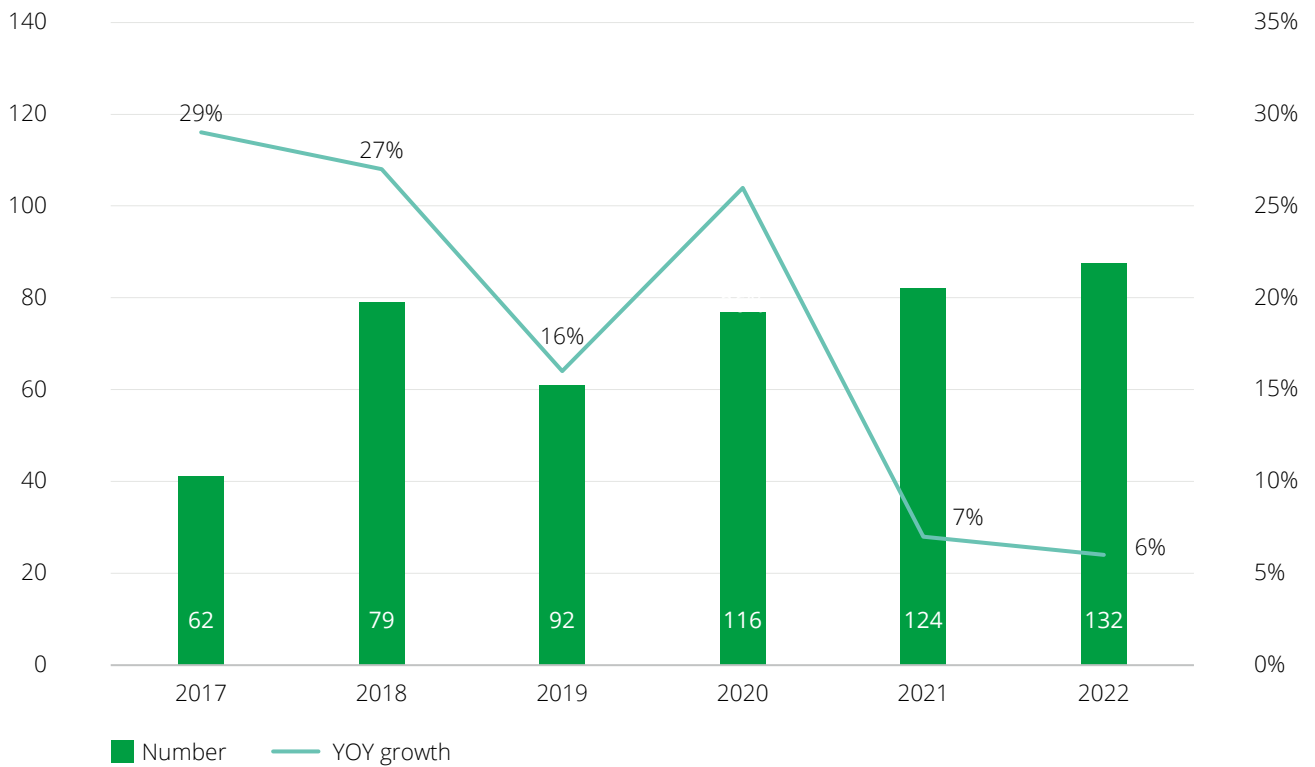
As Hong Kong's digital technology flagship and incubator for entrepreneurship, Cyberport is home to an innovative community of over 2,000 start-ups and technology companies including seven unicorns innovating in FinTech, Smart Living and Smart City, and Digital Entertainment. We support start-ups in different stages of development in a thriving ecosystem. As AI and Web3 have unlocked new potential for development across industries, Cyberport, with the support of the HKSAR Government, will establish an AI supercomputing centre to enhance Hong Kong's R&D capabilities, and continue efforts of Web3 Hub@ Cyberport to develop the Web3 ecosystem. We look forward to furthering collaborations with Deloitte and other partners across sectors to enable the next generations of technology innovators and entrepreneurs, taking forward digital economy with innovation and technology.

**Peter Yan**  
CEO, Cyberport





**Number of co-working spaces/incubators/accelerators in Hong Kong**



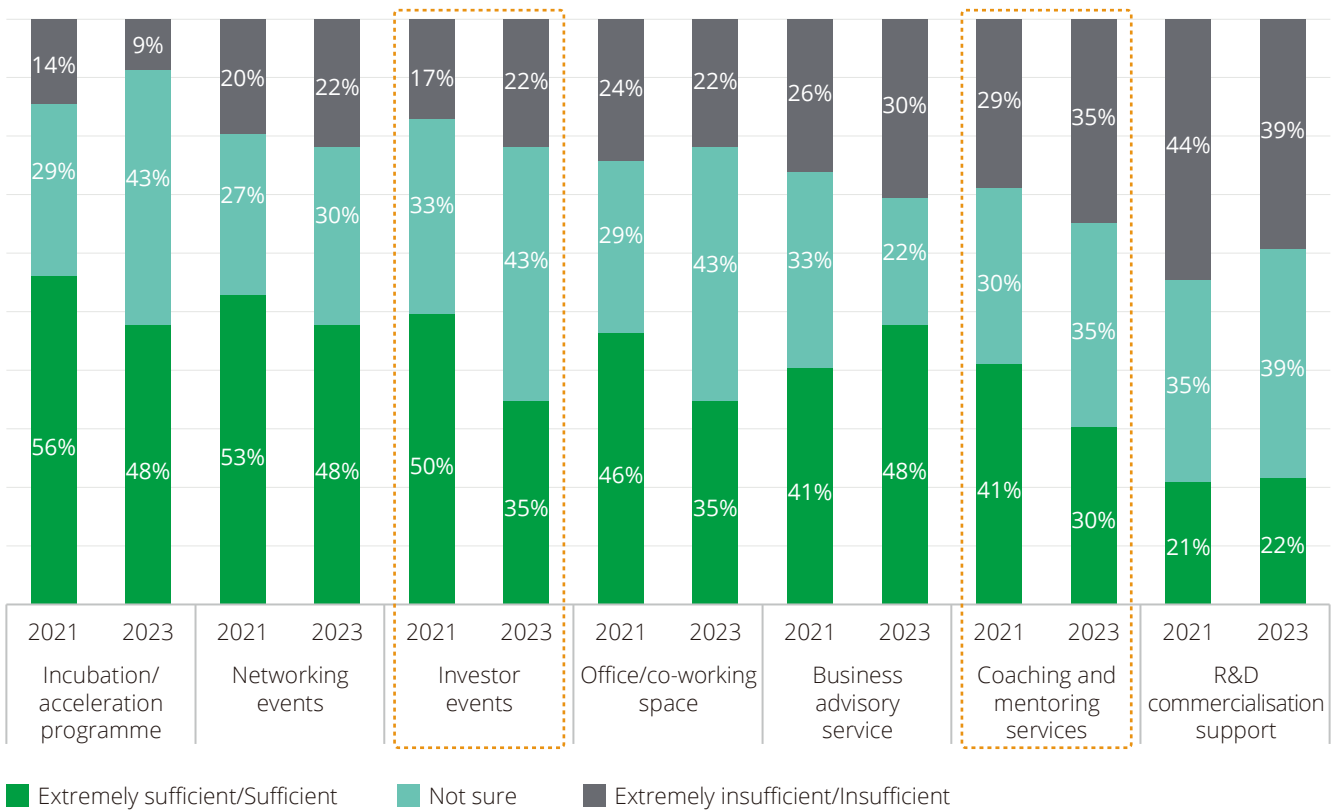
Source: InvestHK

These incubators play a crucial role in supporting and nurturing startups, offering them a myriad of specialised services, from access to shared office spaces, mentorship programs and networking events, to startup competitions allowing entrepreneurs to forge valuable connections with industry experts, potential investors and fellow entrepreneurs.

**Recognition of Hong Kong's startup support services, however, has witnessed a decline among entrepreneurs with support for R&D**

**commercialisation the top area that falls short of expectation.** Though most of the surveyed entrepreneurs acknowledged the various initiatives provided by the Hong Kong Government for the survival and growth of startups, the percentage of enterprises that speak positively about business support they have received has decreased. The most notable decline is in areas such as “investor events”, and “coaching and mentoring service”. Meanwhile, nearly 40% of entrepreneurs believe there is inadequate support for R&D transformation.

### How do you evaluate Hong Kong's business support for I&T enterprises?



Source: Deloitte Entrepreneur Survey

There is consensus among entrepreneurs that incubators need to continuously adapt their support services and resources to meet needs of startups at different growth stages. For instance, during the early stage, startups require guidance and mentorship to refine their business models, develop their products or services, and establish a solid foundation. Incubators play a vital role in providing expert advice, industry knowledge and networking opportunities to assist incubatees in overcoming initial challenges and setting solid groundwork for future growth.

As startups mature, they face new obstacles such as talent acquisition, maintaining profitability and sustaining innovation. Incubators can provide ongoing support by connecting incubatees with talent networks, offering management and operational guidance and facilitating knowledge sharing among peer startups.

Many stakeholders reflected that after completing incubation programs, the market still lacks long-term support, directly affecting the survival rate of startups. By staying attuned to the ever-changing requirements of startups at different stages of their lifecycle, incubators can foster a thriving community of innovative and sustainable businesses.

**Support needs to be strengthened to help startups entering the GBA market.** With the increasing number of Hong Kong startups tapping into the GBA market, they face mounting challenges. For instance, Hong Kong startups need to go through various procedures when operating in the Chinese mainland, such as applying for business licenses, opening bank accounts and transferring money from overseas, which normally involve multiple government departments.



Every brilliant idea needs assistance in becoming a market-ready solution. By nurturing talents, promoting collaborations, facilitating access to funds, and expediting regulatory processes, Hong Kong can remove barriers and create a thriving atmosphere for entrepreneurial innovation. With its comprehensive analysis and strategic recommendations, this research acts as a guiding beacon for policy makers, entrepreneurs, and investors alike. Let us adopt its proposals and work together towards a successful future for our thriving city.



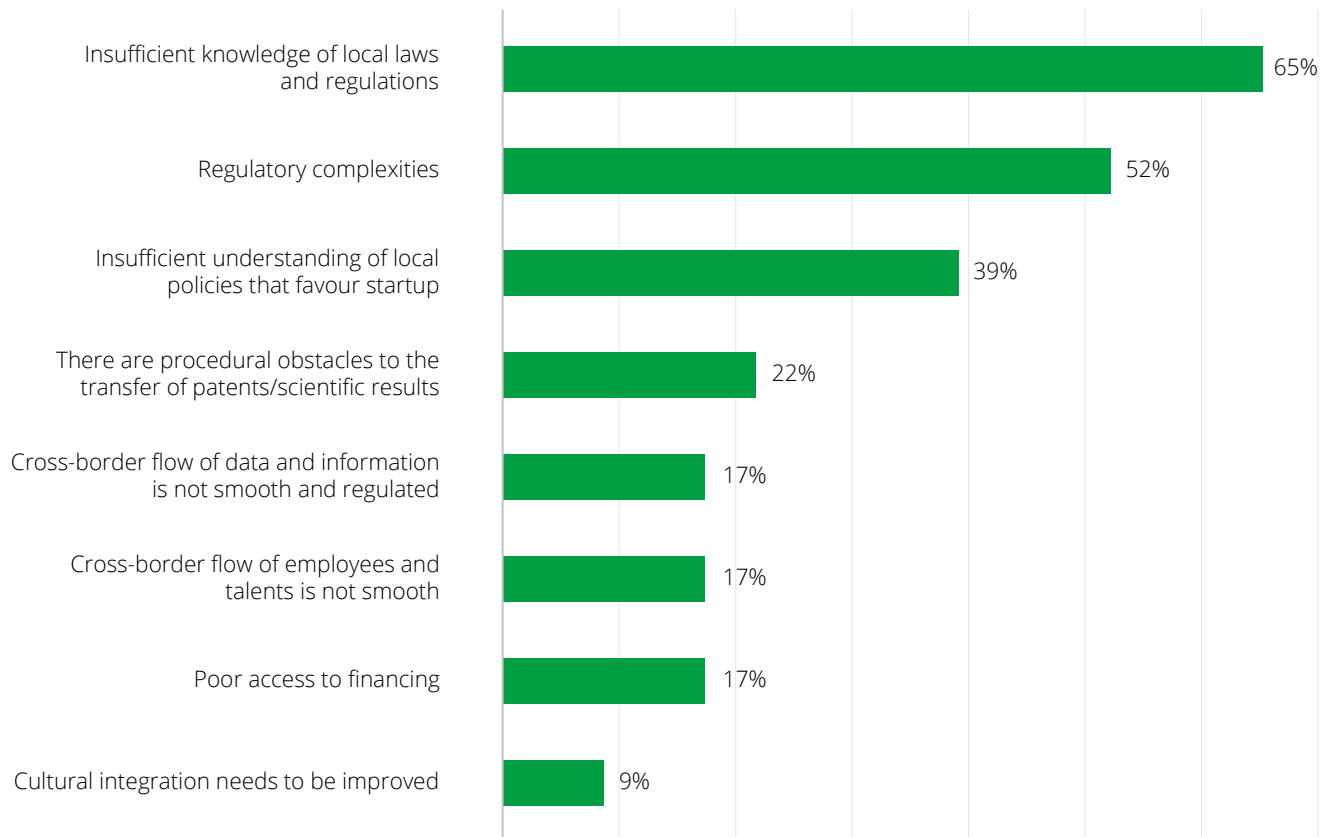
**Cindy Chow**

Executive Director & CEO of Alibaba Hong Kong Entrepreneurs Fund

However, these startups often lack awareness, connections and experience, making it difficult for them to keep up with the latest local government policies supporting startups. In our survey, 65% of entrepreneurs cited insufficient knowledge of local laws and regulations as the top challenge facing Hong Kong startups when entering the mainland market. This is where Hong Kong

incubators come in, filling the information gap and expanding their positioning and service scope. Acting as a bridge, they can assist Hong Kong I&T startups in connecting with mainland resources, including company registration, applying for government subsidies and other financial assistance, and connecting with supply chain resources, potential partners and talent.

**Common challenges Hong Kong high technology firms face when entering the GBA**



Source: Deloitte Entrepreneur Survey



## Culture and norms: Cultivate entrepreneurial spirit by breaking cultural barriers

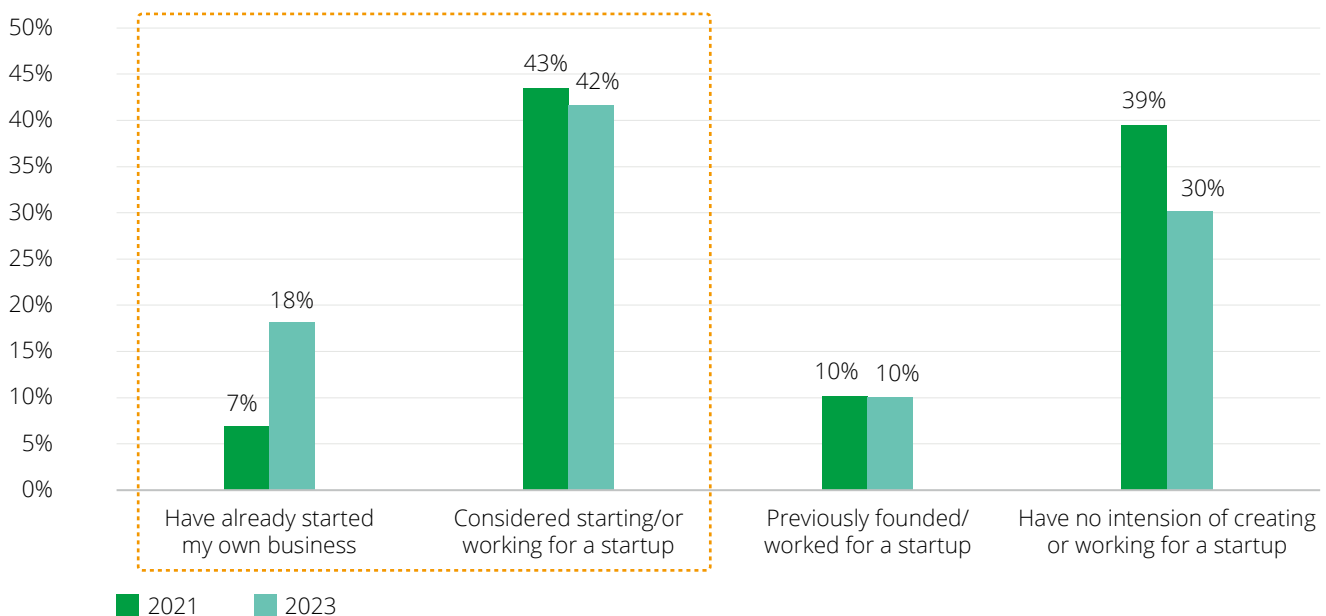
*Entrepreneurial intention has been on the rise among Hong Kong youth in recent years, thanks to relentless efforts to promote I&T and an increasingly conducive landscape for young entrepreneurs. However, systematic changes are still required to cultivate the entrepreneurial culture, including capturing the success of serial entrepreneurs, portraying the thriving prospects of the I&T sector to young people, and enhancing local community's trust in this field*

### The increased visibility of entrepreneurial policies has sparked a new wave of enthusiasm amongst students as a growing number of university graduates are taking the entrepreneurial plunge in Hong Kong.

An increasing proportion of university student in Hong Kong have chosen to deviate from traditional career paths and dared to take the less-travelled road of entrepreneurship. Our survey found that an astounding of 18% of students (up from 7% in 2021) have already

ventured out into the business world with about 42% actively considering starting their own or working for a startup company. Furthermore, the percentage of students with no intention of creating or working for a startup has seen a substantial decline from 39% in 2021 to 30% in 2023. The increase in entrepreneurial intentions can be attributed largely to a more favourable startup environment and continuous efforts by various stakeholders to encourage university students to take the entrepreneurial plunge against uncertain economic conditions.

### Entrepreneurial intention of students



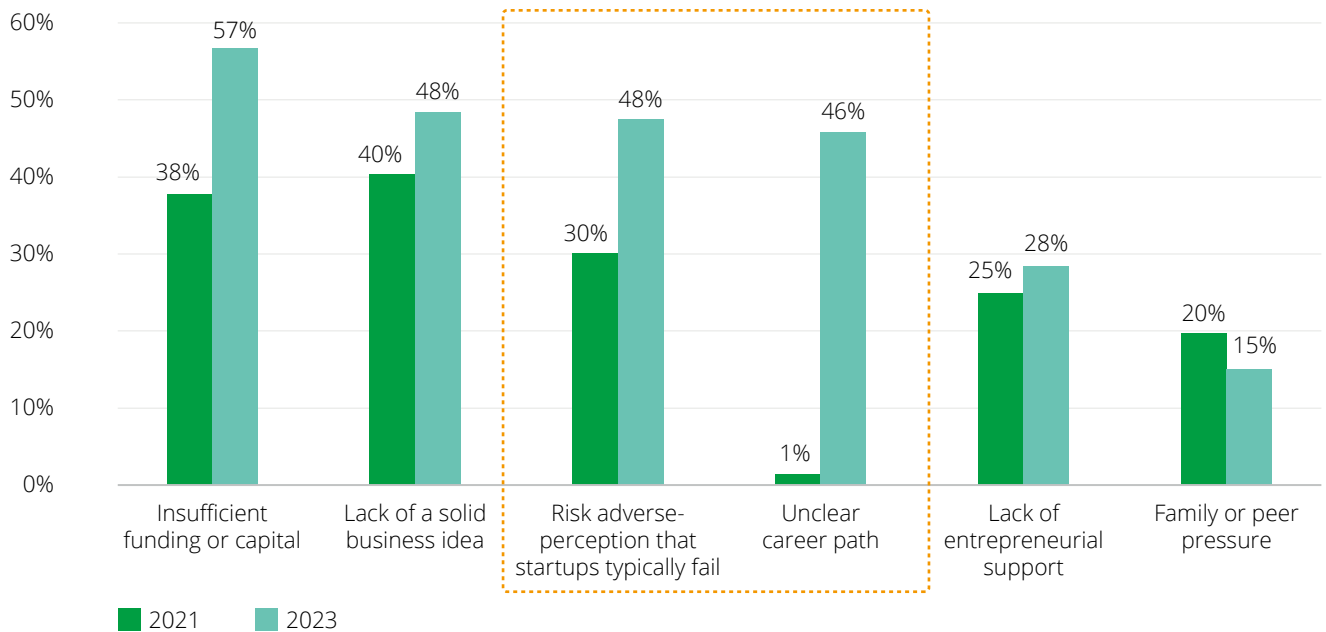
Source: Deloitte Student Survey

Our survey has shown that the latest I&T policy implemented by the Hong Kong Government has received remarkable recognition and increased attention from university students. Compared to the 2021 survey results, the percentage of students who think positively about existing I&T policy has increased significantly from 28% to 37%.

In recent years, universities have sought to increase students' exposure to entrepreneurship by starting entrepreneurship-based programs and business plan competitions. These programs have met with visible success. Approximately 60% of surveyed students acknowledged the entrepreneurial environment in Hong Kong's universities with over 20% expressing high levels of approval for various support they received.

However, there is increasing concern among students regarding entrepreneurship. In 2023, insufficient funds or capital (57%) became the primary reason students choose not to start their own businesses. Compared to 2021, there has been an overall increase in the factors that deter students from considering entrepreneurship, with the largest surge observed in the uncertainty of career paths, rising from 1% to 46%. Apart from making support available and visible, it is also important to raise the awareness among young people about the career path of entrepreneurship and the opportunities and challenges associated with starting their own businesses.

**Top reasons for not considering a startup career**

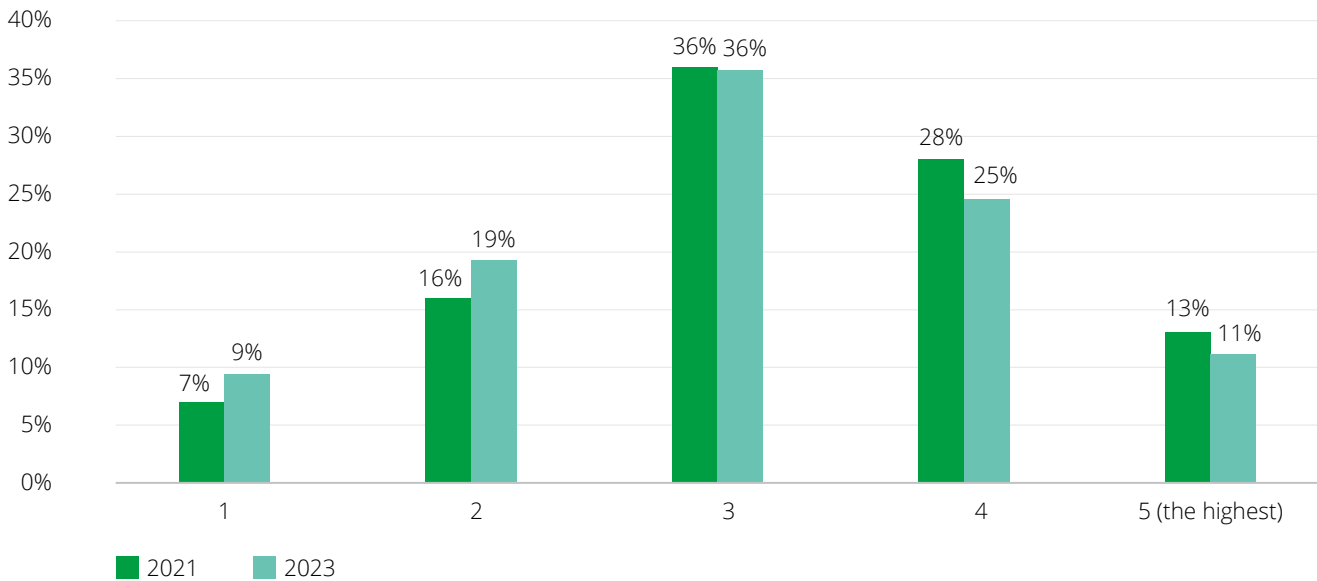


Source: Deloitte Student Survey

Despite growing entrepreneurial intension, perceptions about Hong Kong's entrepreneurial culture and atmosphere have slightly deteriorated when compared with 2021. On a scale of 1 to 5 (5 being the highest),

the percentage of students who rated Hong Kong's entrepreneurial spirit below 3 has increased from 23% to 28% though about 36% students still think highly of Hong Kong's budding entrepreneurial spirit.

### Students' views on Hong Kong entrepreneurial spirit



Source: Deloitte Student Survey

Moreover, there is an outdated and prevailing perspective across Hong Kong society that often associates entrepreneurship with risk-taking and

instability. It is crucial to challenge this belief and recognise the immense opportunities and positive impact that entrepreneurship can bring.



A key shift in Hong Kong's evolving I&T landscape is the emergence of serial entrepreneurs who bring with them a wealth of experience from both their successes and failures. These seasoned entrepreneurs are playing an instrumental role in nurturing the next generation of startups and potential unicorns. Their experience and track record are also vital in attracting investors who are increasingly focusing on the core teams of startups.

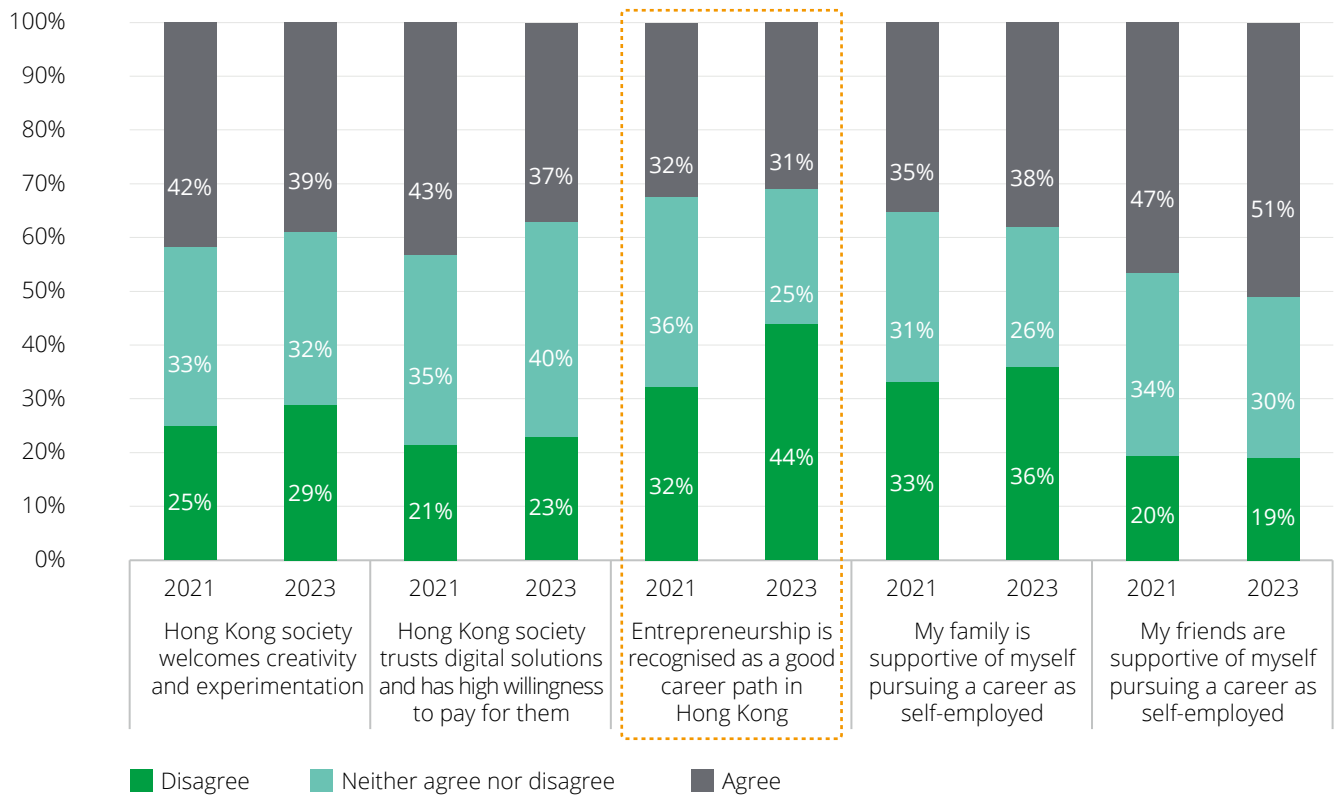
**Fred Li**  
Executive Director of Gobi Partners GBA



One plausible approach is to capture the success of serial entrepreneurs. Habitual founders are often a powerful source of motivation for young people seeking success in the entrepreneurial world and offer their advice and sometimes investment as angels or venture capitalists. Hong Kong can actively attract serial and experienced entrepreneurs back to Hong Kong and contribute to the local startup community. The active

participation of successful entrepreneurs in their local ecosystem through re-investment of profits or sharing of experience as mentors has proven to be a crucial aspect of building a strong entrepreneurial ecosystem. Stakeholders during our interview also said that serial entrepreneurs can give younger generations successful examples to look up to.

### Students' views on Hong Kong's entrepreneurial atmosphere



Source: Deloitte student survey

**More concrete efforts need to be made to move away from the traditional but prevailing mindset that equates achievement with good academic results, to one that sees entrepreneurship as an important aspect of youth development.**

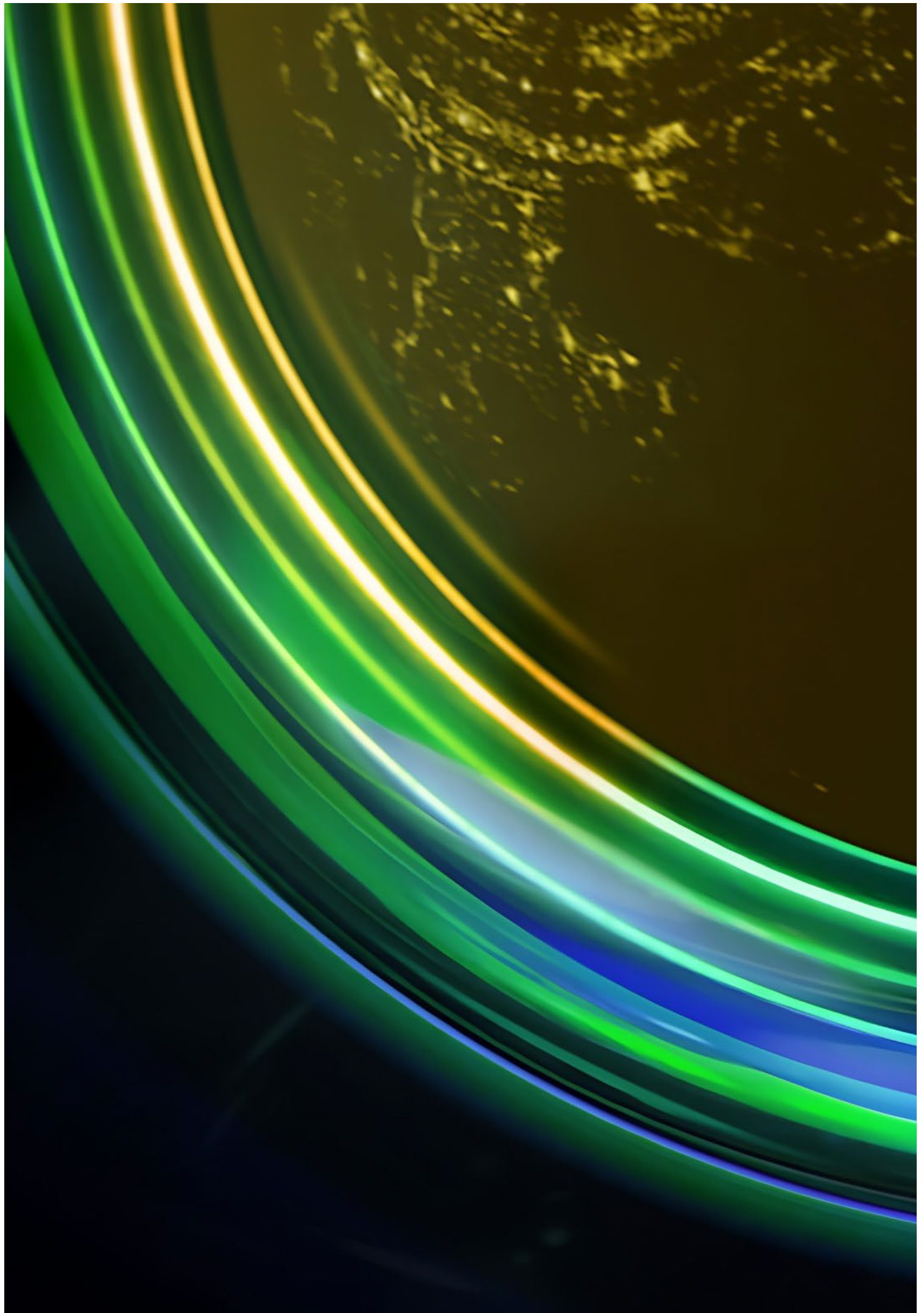
To foster a culture of entrepreneurship, the ITC has organised frequent exhibitions and workshops to promote public interest and showcase Hong Kong's I&T innovations and achievements. The ITC also supports competitions like the Hong Kong Student Science Project Competition and the Joint Schools Science Fair and is encouraging outstanding university students who are passionate about innovation and technology to pursue careers in I&T through its Innovation & Technology Scholarship.

For young people, macro industry policies are an abstract concept that need to be translated into career options and planning that are relevant to them. The Government needs to show young people the prospects of Hong Kong's thriving I&T sector and demonstrate that students will make a great contribution by entering the field.

It is also essential for the Government to collaborate with educational institutions, research centres and businesses, and provide more information, internship opportunities and work placements to hire young students who aspire to enter the field of technology and innovation.

**The Government needs take the lead in enhancing the community's trust in the I&T sector through institutional reforms.**

Many startups anticipate seeking more non-monetary support to grow their businesses. According to a survey by the Hong Kong Economic and Trade Bureau, one of the biggest challenges facing startups is gaining the trust of their customers, as local communities are sceptical about I&T. This trend emerged in our survey as well, with only about one fifth of entrepreneurs thinking Hong Kong society trusts digital solutions and has a high willingness to try out new things. To increase public trust in I&T, the Government can consider reviewing the existing procurement system and introducing greater flexibility for public institutions to adopt I&T products and solutions first, as this would boost the community's confidence in I&T and at the same time provide more opportunities for local startups.





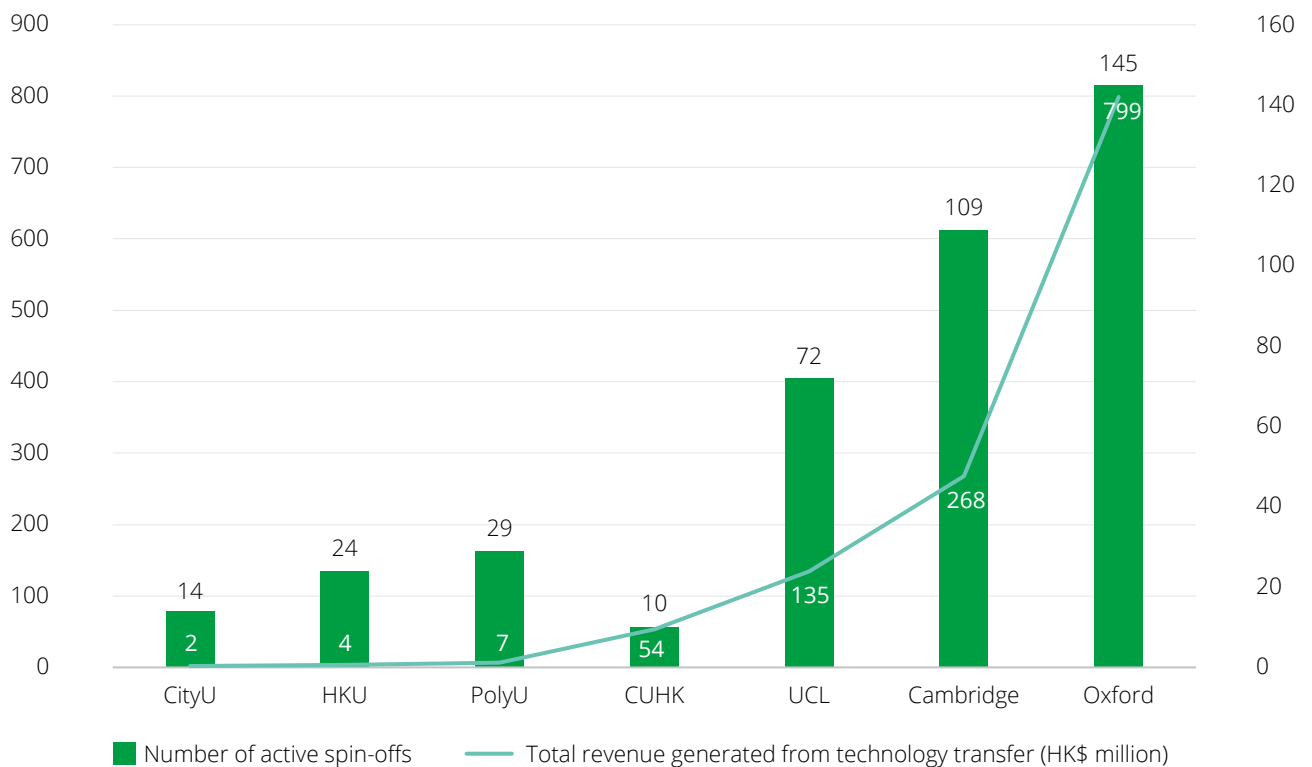
# Turning innovations into wealth: how to fill the commercialisation gap

One of the greatest challenges facing Hong Kong's I&T sector is its limited capacity to convert scientific breakthroughs and technological achievements into commercial successes, limiting its contribution in economic growth and societal benefits.

Slow commercialisation has been evident in the number of patents granted and level of income generated from

technology transfer. For example, the amount of income Hong Kong universities derived from IP is lagging their western counterparts. As shown in the below chart, HKCU- university, with the highest IP income generated from IP, still underperformed compared with leading overseas universities such as UCL, Oxford and MIT.

**Comparison of Hong Kong and selected overseas universities in technology transfer income in 2019**



Source: University Grants Committee, Our Hong Kong Foundation

There are multiple root causes of this weak commercialisation. This report identifies the five key major barriers to innovation commercialisation in Hong Kong: financial constraints, cultural impediments, information asymmetry, different research agendas

and timescales, and a lack of absorptive capacity in local industry. It is imperative to delve deeper into these issues to gain a comprehensive understanding of barriers to commercialisation.

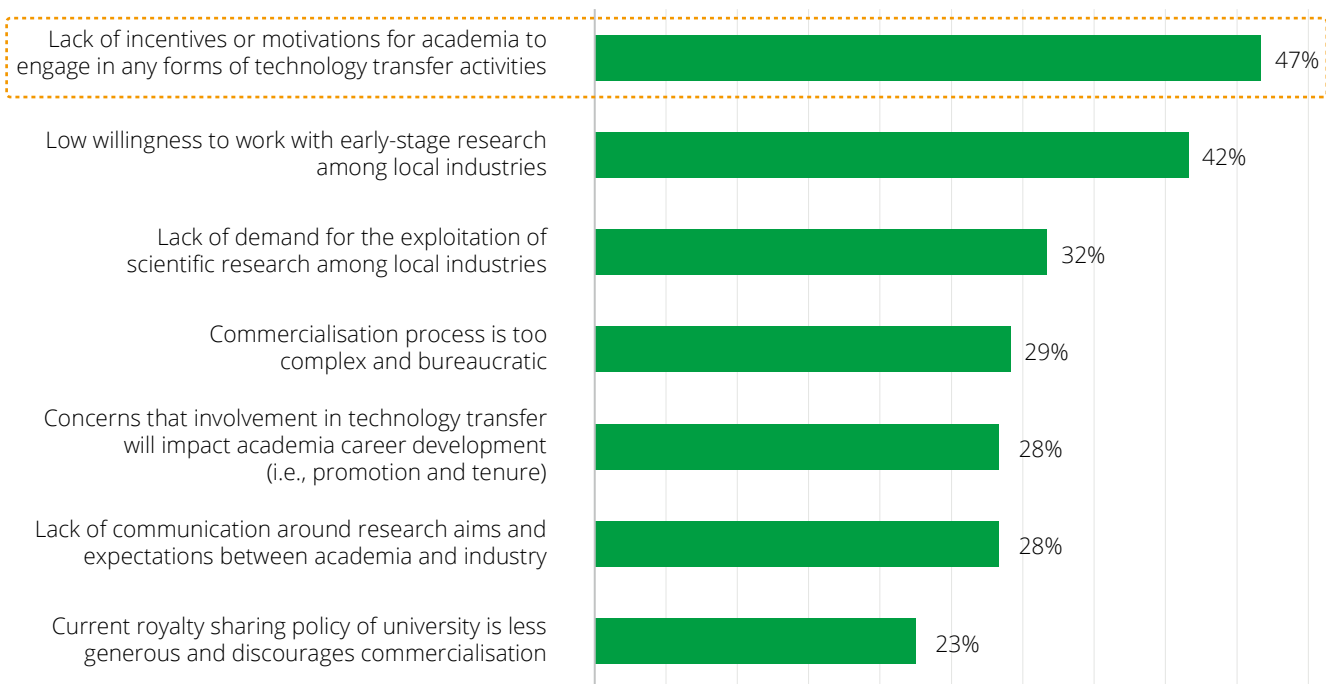
## Key barriers to commercialisation

**Institutional barriers.** Academics who engage in technology transfer activities receive limited recognition. Research publications and grants continue to dominate the promotion and tenure processes, while technology transfer activities are seen largely as supplementary rather than integral to academic success.

Academics in Hong Kong are subject to a performance review system that places a heavy emphasis on traditional academic indicators such as research

publications, citations and grants. Although these indicators are important for measuring academic excellence, they do not fully capture the value and impact of technology transfer. Consequently, academics might solely prioritise enhancing academic performance, making them less willing to participate in technology commercialisation. This is in line with our survey, in which 47% of university students cited a lack of incentives and motivations as the top barriers preventing academics from engaging in technology transfer.

## Factors influencing the translation of scientific research

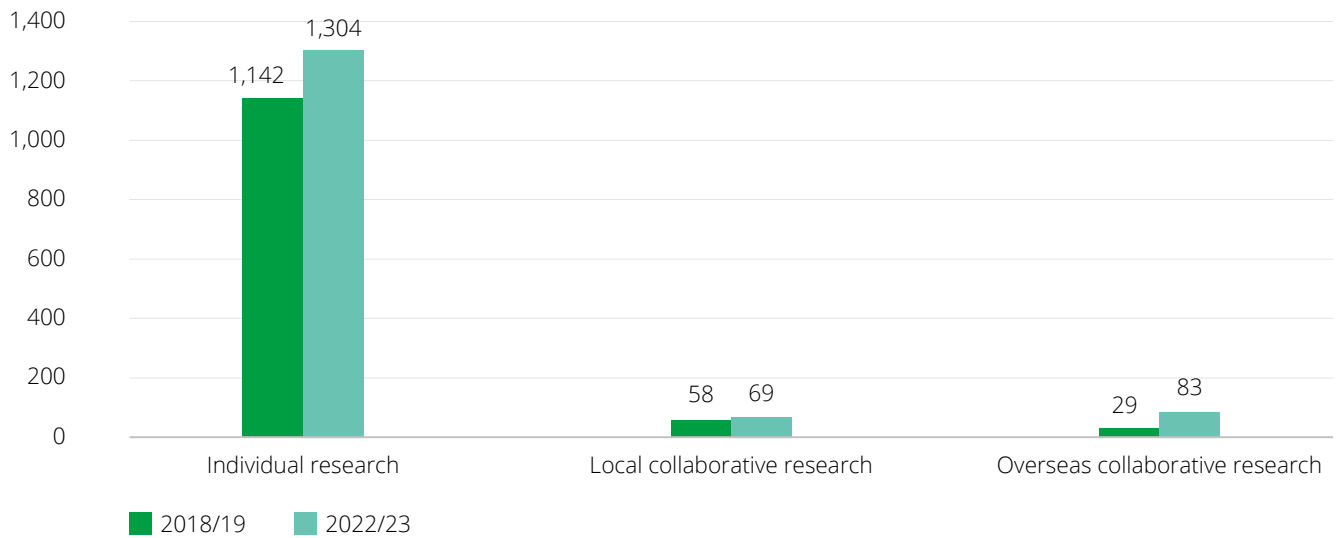


Source: Deloitte Student Survey

There is also a lack of incentives for university researchers to collaborate with business in Hong Kong. The existing funding allocation mechanism of research institutions discourages cross-institutional and interdisciplinary collaboration. Our survey shows a similar trend, with more than one-fifth (22%) of respondents engaged in scientific research work or assuming teaching roles holding the view that their university does not provide enough opportunities for collaboration with enterprises.

Hong Kong has not been able to foster a collaborative research culture and environment that values technology transfer endeavours that empower local industry to upgrade its technology. More than a third (33.3%) of respondents with research or teaching roles at universities believe the importance of technology transfer across Hong Kong universities is not clearly communicated.

**Distribution of University Grants Committee funding by type of program in 2018/19 and 2022/23**



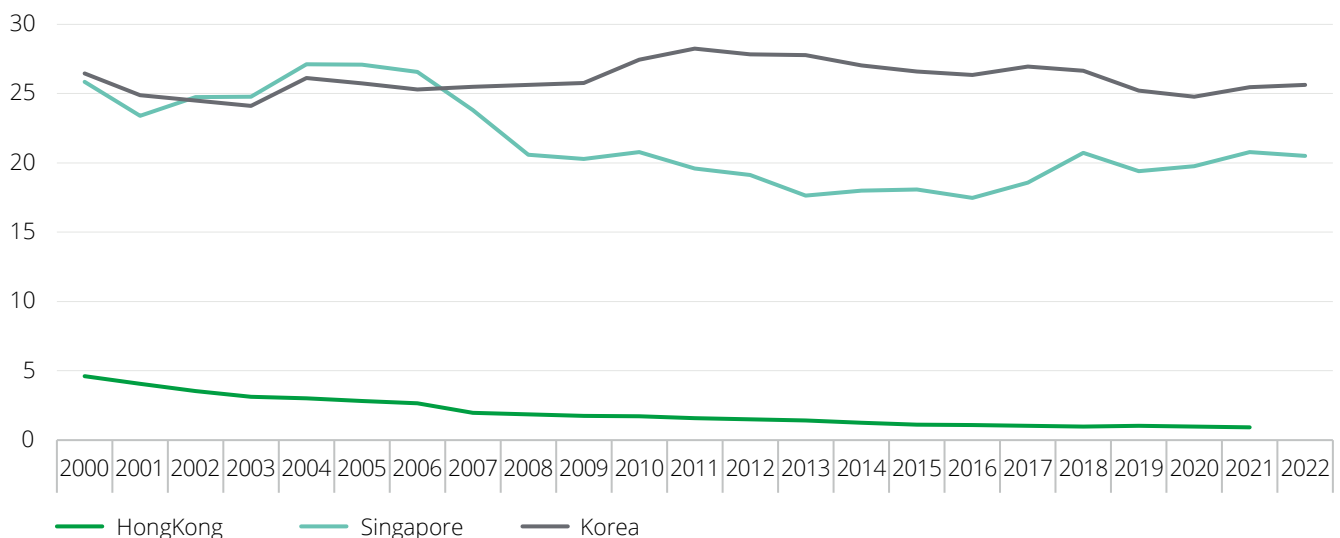
Source: University Grants Committee

In addition, the existing performance review system requires academics to dedicate a substantial portion of their time to research and teaching. This leaves little time to engage in technology transfer activities, such as patent filing, commercialisation of research findings or collaboration with industry partners. Academics can be reluctant to engage with industry if the process is considered time-consuming.

**Industry constraints.** Technology commercialisation is as much influenced by the technology transfer activities of universities as it is by commercial demand for R&D.

The composition of local industry, its maturity and capacity to absorb university generated scientific results and technological innovations have an outsized influence on the level of commercialisation. A lack of industrial clusters is one hindrance to Hong Kong converting its scientific research achievements. Hong Kong is the only one of the four "Asian Tigers" that lacks high technology and high value-added industries as one of its economic pillars. Manufacturing in Singapore, of which 40% is advanced manufacturing, accounts for 20% of its GDP, yet manufacturing accounts for less than 1% of Hong Kong's economy.

**Manufacturing as a percentage of GDP in selected economies**



Source: World Bank

The "hollowing out" of industries in Hong Kong has led to a shortfall in demand for extensive R&D activities and collaborative research with universities. In addition to a less intensive industry structure, local enterprises generally have low incentives to engage in R&D (as we discussed in a prior chapter).

**Financial constraints.** Insufficient capital poses a stiff challenge to the commercialisation of innovation. Limited access to funding and investment opportunities restricts the ability of enterprises, especially SMEs, to conduct in-house R&D or collaborative research with universities. Additionally, SMEs, which typically have less capital and human resources, can perceive collaboration with universities as costly and time-consuming. Meanwhile, the perceived risk of investing in collaborations can outweigh the potential gains. This apprehension, coupled with the challenges of managing collaborations effectively, could discourage SMEs from pursuing partnerships with universities.

**Cultural differences.** There are substantial cultural differences between industry, particularly SMEs, and academia, which results in a mismatch of needs, goals and priorities. For instance, universities are often driven by long-term research goals and academic milestones, which often does not align with the short-term development focus of SMEs. This misalignment can create discrepancies in expectations and delays in commercialisation, hindering the development of successful collaborations.

**Disparity in communication.** Information asymmetry presents another hurdle. A lack of knowledge of ongoing research activity among universities and the individuals or organisations involved creates obstacles to potential collaboration and partnership opportunities. Moreover, the lack of effective communication channels and shared understanding can hinder trust-building and collaboration efforts.

## Unlock potential to translate research into productivity

**Universities can create an environment that motivates researchers to commercialise their work, fostering innovation and driving economic impact, by:**

- **Providing recognition and incentives for R&D translations.** Incentivise early researchers who participate in academia-industry collaboration. This can be done by adjusting existing academic assessment criteria to give equal weight to "research output" and "research impact" and by examining terms regarding income generation from spinouts and licensing/royalties to make them more attractive to researchers. Additionally, financial incentives such as grants, a generous royalty sharing policy, and funding opportunities designated for collaborative projects can further incentivise researchers.
- **Exploring various channels to engage with industry.** Commercialising existing IP is not the only route to technology transfer. Researchers should be encouraged to explore various forms of collaboration with business, such as technology licensing and collaborative and contract research that allow researchers and industry professionals to create solutions which address real-world challenges facing an industry or sector.
- **Boosting awareness about potential opportunities of technology transfer.** Universities should increase awareness among researchers about the potential benefits of commercialising their research. In the meantime, clear and concise guidelines are needed around IP protection, ownership and revenue distribution to ensure researchers fully understand the process. Also, simplifying IP licensing and transfer would expedite commercialisation and encourage early-stage startups to license university-owned IP more easily. Establishing clear guidelines for determining the value of IP would ensure fair compensation for researchers while offering competitive pricing to prospective investors.



- **Enhance necessary skills and experience to drive commercialisation activity forward.**

Universities should improve the skills and capacity necessary to develop commercialisation opportunities and engage with industry partners. That can be achieved by hiring more experienced professionals to support university researchers and inviting industry experts to join universities' technology transfer committees. Additionally, Technology Transfer Offices need to strengthen their role in facilitating cross-sectoral collaboration, because in most cases there is a lack of awareness among researchers about which business to collaborate with. Universities should also further enhance cross-institutional and interdisciplinary cooperation.

- **Creating flexible and fair revenue sharing models that motivate academics to engage with industry.**

Universities can consider implementing tiered revenue sharing models based on the commercial success of research, which would motivate researchers to participate in commercialisation efforts. Providing flexibility in revenue distribution would also allow researchers to receive a larger share of the profits in cases where their contributions are considered more significant. In addition, more financial support should be put in place for patent filing, market research and prototype development, to reduce the financial burden on researchers.

- **Fostering a culture that values knowledge transfer.**

Highlighting successful cases of research commercialisation would inspire and encourage other researchers. Celebrating and recognising researchers who have successfully brought their innovations to the market would foster a culture that values commercialisation and entrepreneurship.

**Government has a key role in incentivising academia and industry collaboration.**

- **Establishment of funding programs designed to facilitate academia-industry collaborations.**

The HKD10 billion Industry-Academic-Research 1+ Plan is a promising start. Stakeholders anticipate more tailored funding programs designed to facilitate academia-industry collaborations. These could take the form of financial support for joint research projects, industry placements/internships for academic researchers, or co-funding initiatives that promote the commercialisation of research outcomes.

- **In addition to financial support, the Hong Kong Government needs to invest in the creation of platforms for knowledge exchange and engagement.**

This report identifies a common pattern among developed economies in promoting academia-industry collaboration. Whether in the form of inter-engagement in technology transfer or technology transfer offices (TTOs) derived from universities themselves, their shared mission is to bridge the gap between the innovation supply from universities and research institutions and the market demands of industries. For instance, the Knowledge Transfer Program launched by the UK government provides businesses with the opportunity to access the knowledge and expertise of academic institutions, enabling them to solve specific challenges and innovate in their sectors.

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