

**For discussion on
20 June 2023**

**Legislative Council
Panel on Commerce, Industry, Innovation and Technology
Latest Development of the Testing and Certification Industry**

PURPOSE

This paper updates Members on the latest development of Hong Kong's testing and certification ("T&C") industry.

BACKGROUND

2. The local T&C industry has been playing a vital role in the daily life of the general public. Through specialist techniques and processes, covering mainly testing¹, inspection² and certification³ work, it helps ensure that the products or services are in compliance with international and regional standards in terms of quality and safety. Besides, the industry makes contributions to Hong Kong's international trade by gatekeeping the consumer products for export with the assurance from an independent third party that these goods have fulfilled the specified requirements. During the COVID-19 epidemic period, the industry has stayed fully committed to supporting the fight against the virus, not only to carry out testing of anti-epidemic protective items like medical face masks, hand sanitisers, etc., but also to reach out to staff of residential care homes, elderly and construction site workers for specimen collection and testing, as well as to participate in sewage testing for facilitating early detection of infectious clusters.

¹ Testing refers to the determination of one or more characteristics of an object of their conformity to requirements according to a procedure, such as testing the colour fastness and shrinkage of clothing for preparing care labelling.

² Inspection is the examination of a product design, product, process or installation and determination of its conformity to requirements on the basis of professional judgement, including using specific equipment. For example, an overseas buyer engages an inspection body to check a batch of products at the factory before shipment to ensure that the production complies with the buyer's specifications.

³ Certification means a third-party issuing a certificate to confirm that a product, process, system or person satisfies a set of specified requirements. For example, a certification body issues a certificate to an organisation confirming its conformity to the requirements of ISO 9001 Quality Management System standard.

3. The Hong Kong Council for Testing and Certification (“HKCTC”) was established in 2009 to advise the Government on issues of the industry, including the overall development strategy, raising professional status, enhancing public awareness, etc., with the vision for Hong Kong to develop into a T&C hub in the region. The HKCTC has been adopting a market-oriented approach to promote the industry’s development, facilitating collaboration among the stakeholders and explore new business opportunities in different fields. In addition to providing secretariat support to the HKCTC, the Innovation and Technology Commission (“ITC”) renders accreditation services to local laboratories, inspection bodies and certification bodies through the Hong Kong Accreditation Service (“HKAS”). ITC is committed to fostering an environment conducive to the development of the T&C industry and opening up further development opportunities for the industry.

INDUSTRY PROFILE

4. The local T&C industry has shown a steady growth in the number of establishments and the number of persons engaged during recent years. However, the dampened economic sentiment due to factors, such as a softened global economic growth, intensified trade tensions, etc. and coupled with the impact of the epidemic, the total business receipts and the direct economic contribution to Hong Kong of the industry have registered a decline in 2019 and 2020. Upon the gradual resumption of the global economic activities in 2021, with the Hong Kong’s overall annual economy recording a growth of 6.4% and the total export of goods registering an increase of 19% in real terms, the relevant figures of the industry have recovered from a downward trend with a notable rise in the year. Figures relating to the local private independent establishments engaging in testing, inspection and certification activities in the years of 2017 - 2021 are as follows:

Year	2017	2018	2019	2020	2021	Increase over 5-year period
Number of establishments	720	730	770	800	820	+13.9%
Number of persons engaged	14 300	14 620	14 790	15 110	15 270	+6.8%
Total business receipts (\$ million)	15,021	15,550	14,947	14,925	20,030	+33.3%
Direct economic contribution to Hong Kong (\$ million)	7,516	7,675	7,338	6,714	9,285	+23.5%

5. According to the statistics for the year of 2021 released by the Census and Statistics Department in March 2023, testing, inspection and certification accounted for 74.9% (i.e. \$15,000 million), 11.0% (i.e. \$2,196 million) and 2.5% (i.e. \$510 million) of the total business receipts of the industry respectively⁴. Among the testing services, the major income sources were medical testing (56.7%), toys and games (11.4%), textiles, clothing and footwear (9.7%), electrical products and telecommunications equipment (9.1%), as well as construction materials (6.3%). Compared to 2020, the industry business receipts in 2021 increased by \$5,105 million (from \$14,925 million to \$20,030 million), mainly due to the increase in the business receipts of medical testing of \$4,763 million.

ACCREDITATION SERVICE

6. Accreditation is an official recognition of the competence of a T&C establishment in carrying out specific conformity assessment tasks. The HKAS provides accreditation for local laboratories, inspection bodies and certification bodies through three voluntary accreditation schemes to confirm their competence to perform testing, inspection and certification activities in accordance with international standards. Services currently provided by the HKAS include medical testing, testing of toys and children's products, testing and inspection of construction materials, quality management system certification and product certification (see **Enclosure I** for details). The HKAS has also been introducing new accreditation services in response to market needs. For instance, the HKAS launched the accreditation service for "non-destructive testing, surveying, imaging and diagnosis" applied in underground utility surveys in November 2021. Two local laboratories have received accreditation for such activities so far. As at end of May 2023, 286 bodies have been accredited by the HKAS, including 237 laboratories, 23 inspection bodies and 26 certification bodies.

7. The HKAS has been actively participating in activities organised by the international accreditation community and its status has acquired worldwide recognition. The HKAS is a member of three international accreditation organisations⁵ and a signatory to the multilateral mutual recognition arrangements administered by these organisations. Under these arrangements, accreditations issued by the HKAS are recognised by accreditation bodies in over

⁴ Income from other services, e.g. consulting service fees, account for 11.6% of the total business receipts.

⁵ The three international accreditation organisations are International Accreditation Forum ("IAF"), International Laboratory Accreditation Cooperation ("ILAC") and Asia Pacific Accreditation Cooperation ("APAC").

110 economies, including the Mainland, Japan, Association of South East Asian Nations, Australia, New Zealand, European Union, the United States as well as a number of Belt and Road countries, thereby enhancing the recognition of T&C results issued by the accredited organisations. In June 2023, the HKAS successfully extended its Asia Pacific Accreditation Cooperation Mutual Recognition Agreement signatory status to include “ISO/IEC 17029 and ISO 14065 – validation and verification of environmental information”.

8. The Standards and Calibration Laboratory (“SCL”) of the ITC is the custodian of Hong Kong’s reference standards of physical measurements. The SCL provides comprehensive accredited calibration services to users of measurement standards and measuring instruments (including T&C bodies) to ensure measurement accuracy and metrological traceability to the International System of Units. In addition, the SCL provides accredited Proficiency Testing Provider services to laboratories in the T&C industry to demonstrate their technical competence. The SCL is a signatory to the Mutual Recognition Arrangement drawn up by the International Committee for Weights and Measures. Through the Mutual Recognition Arrangement, accredited calibration certificates issued by the SCL are widely recognised and accepted internationally.

FOSTERING AN ENVIRONMENT CONDUCIVE TO THE DEVELOPMENT OF THE T&C INDUSTRY

9. To consolidate the advantages of the T&C industry and maintain its competitiveness, we endeavour to enhance the professional standards and technical know-how of the practitioners, as well as to facilitate continuously the understanding of the students and young persons about the industry to facilitate recruitment of talents. We also make every effort to expand the talent pool of the industry through implementing a variety of measures, e.g. the Testing and Certification Manpower Development Award Scheme, the Testing and Certification Sector Job Creation Scheme, etc. The relevant measures are detailed below -

(a) Improving Human Resources

10. Human resources is the key to long-term development of an industry. The high-level professionalism and integrity as well as smart market acumen of T&C practitioners have helped sustain the competitive edge of the industry. We need to continue to attract and retain outstanding practitioners in order to maintain the competitiveness of the industry. In this regard, the HKCTC set up the Panel on Manpower Development in June 2018, tasked with focusing on

strengthening of the manpower of the industry.

11. The Panel on Manpower Development has earlier produced a set of resource package, targeting the young generation and the parents. Apart from illustrating the contribution of the industry in assuring the safety and quality of various facets of our daily life, the resource package presents the job opportunities and career path of the industry's practitioners, in order to attract young persons to join the industry. We have been promoting the relevant information through various means, including a number of social media channels.

12. In order to further foster the interest of the young generation in T&C work, the ITC has been organising a number of briefings/testing demonstration sessions and workshops for promoting the chemistry teaching kit for the senior secondary curriculum developed by the HKCTC. Since July 2021, some 700 teachers and students have taken part in such activities and gained a deeper understanding of T&C work through taking part in such activities. Moreover, we have developed a new set of STEM teaching kit suitable for junior secondary students, introducing some basic scientific knowledge and concepts about product testing and analysis (e.g. analysis of colorants in food and personal-care products, analysis of bacteria in environmental samples). Since its launch in July 2022, over 100 secondary school teachers and laboratory technicians have attended the two briefings/testing demonstration sessions on the kit. We have also been collaborating with the Education Bureau to promote the kit to schools for use in class and extra-curricular activities. Furthermore, the HKCTC Secretariat has been organising career talks and laboratory visits for secondary school and university students, providing vacancy information on internship opportunities at T&C institutions (about 100 placements each year) to local universities and the Vocational Training Council as well as publishing the same on the HKCTC website, enabling students to obtain information on the relevant internships more easily. Besides, we would organise visits to the SCL for some 80 secondary students in 2023.

13. The local tertiary education sector continues to offer more courses dedicated to T&C, ranging from higher diploma to postgraduate levels, to meet the needs of people from different backgrounds. In this regard, the Hong Kong Polytechnic University will launch a new Master of Science programme in Sustainable Technology for Carbon Neutrality in 2023-24 academic year, which will facilitate students to enrich their professional knowledge in relation to T&C work in the environmental, social and governance ("ESG") areas. A list of programmes dedicated to T&C offered by higher education institutions is set out in **Enclosure II**. Besides, in 2022-23 academic year, the Study Subsidy

Scheme for Designated Professions/Sectors⁶ covers three undergraduate programmes⁷ of the Hong Kong Metropolitan University. In addition, starting from 2023-24 academic year, the subsidy scope will be expanded to cover top-up degree programmes. The total number of relevant subsidised places would increase from 160 in 2022-23 academic year to about 200 in 2023-24 academic year, thereby further facilitate the industry to build up a pool of professional talents for meeting the manpower needs for its development.

14. The good business ethics of the local T&C industry, which fosters confidence in clients about our T&C services, is among the major competitive edges that Hong Kong enjoys. The ITC collaborates with the Independent Commission Against Corruption to organise an annual seminar on the theme of integrity to keep the T&C practitioners abreast of the anti-corruption regulations and corruption prevention guide while providing analysis on the common corruption risks and ethical issues that they may encounter. In 2021 and 2022, some 750 participants joined the seminars. In the same period, the HKCTC also co-organised 10 professional talks on various topics (such as information and cyber security certification, Chinese medicines research and development, ESG and sustainability, etc.) with other institutions so that practitioners can be kept informed of the latest information on different aspects.

15. With a view to encouraging T&C bodies to invest in talent training and development, while also commending T&C practitioners who have striven for continuous learning and professional development, and/or contributed to service quality improvement, the ITC had given full support to the HKCTC in launching the first Testing and Certification Manpower Development Award Scheme in 2021. The Award Scheme was well received and able to attract participation from public and private T&C bodies of various scales and in different fields, and their staff members. The results of the Award Scheme were announced at the award presentation ceremony in December 2021. The awardees of the Professional Award included six junior professionals and 10 middle management personnel. Among the 30 T&C bodies awarded with the Corporate Award, two were given special commendation for their exceptional commitment to T&C practitioners' training and development. In view of the favourable feedback from the T&C industry, the HKCTC would organise the Award Scheme in 2023 again. The Award Scheme is open for applications from 2 May till end-July, with the award presentation ceremony scheduled for December.

⁶ The Scheme subsidises students to pursue designated full-time locally accredited self-financing undergraduate programmes in selected disciplines with keen manpower demand, including the T&C industry.

⁷ The three undergraduate programmes are: Bachelor of Applied Science (Honours) in Integrated Testing, Inspection and Certification, Bachelor of Science (Honours) in Testing Science and Certification, and Bachelor of Science (Honours) in Food Testing Science.

16. The ITC launched for the first time the Testing and Certification Sector Job Creation Scheme in August 2022, aiming to encourage private T&C bodies to create more job opportunities and attract talents to join the T&C industry, while relieving the unemployment situation owing to the epidemic. Under the Job Creation Scheme, each private T&C body with valid accreditation status given by the HKAS can apply for a monthly subsidy for up to five eligible job positions. For each approved position, the applicant employer would receive a monthly subsidy of \$10,000 or 50% of the salary of the position, whichever is lower, for 12 months. The application period would end by 31 July 2023. As at 31 May 2023, 116 job positions in 44 private T&C bodies have been subsidised under the Job Creation Scheme, involving a total annual funding of approximately \$12.62 million.

(b) Upgrading technological levels

17. We encourage the T&C industry to adopt new technologies to enhance their business operations. In February 2022 and February 2023, the HKCTC organised two webinars, whereby the speakers shared their experience and insights in using latest building inspection technology (e.g. artificial intelligence, drones, infra-red thermography) and in the application of automation and technology in construction materials testing and monitoring of materials' condition respectively. The two webinars attracted a total of over 550 participants. Programmes under the Innovation and Technology Fund have been funding the research and development ("R&D") projects on new testing technologies. The Innovation and Technology Support Programme subsidises applied R&D projects that are industry-oriented (including T&C industry) and have potential for commercialisation. In addition, the Technology Voucher Programme has been subsidising T&C enterprises to use technological services and solutions to enhance their productivity, or upgrade or transform their business processes.

18. Regarding the upgrading of the technical capabilities of laboratories, the Government Laboratory organised a total of four proficiency testing programmes from 2021-22 to 2022-23, covering different areas of the food, Chinese medicines and Chinese medicinal oils industries to assess the testing competence of the laboratories by comparing the testing results among them. According to the international standards for laboratory accreditation, participation in proficiency testing is one of the mandatory requirements for obtaining laboratory accreditations.

(c) Open Up Further Opportunities

19. Ongoing efforts are made by the ITC to open up further business opportunities for the T&C industry through implementing a series of measures. We take the initiative to reinforce the branding of “Tested in Hong Kong, Certified in Hong Kong”. By participating in trade shows organised by the Hong Kong Trade Development Council (“HKTDC”) locally and in the Mainland as well as overseas, we reach out to potential users with our publicity drive on the strengths of Hong Kong’s T&C services for attracting their use of the relevant services. Having regard to the travel restrictions to Hong Kong under the epidemic, we also launched an online promotion campaign to reach out to potential overseas users of the local T&C services from July to November 2022. The campaign targeted manufacturers and traders in Asia, North America and Europe.

Mainland and Hong Kong Closer Economic Partnership Arrangement (“CEPA”)

20. Since the signing of *CEPA Supplement VII* in 2010, the Mainland has been gradually opening up its T&C market to Hong Kong. This includes allowing testing bodies in Hong Kong to cooperate with designated Mainland certification bodies to undertake testing for certain products requiring China Compulsory Certification (“CCC”)⁸.

21. The latest amendment of the CEPA Agreement on Trade in Services, which came into effect on 1 June 2020, includes new measures for the T&C industry. These measures include: (i) qualified Hong Kong testing bodies may cooperate with designated Mainland organisations to undertake testing work for CCC products manufactured or processed in any region (including outside China); (ii) qualified Hong Kong certification bodies may commission inspectors to conduct CCC factory inspections for manufacturers of CCC products throughout the Mainland; and (iii) qualified Hong Kong testing institutions may undertake a new task in the CCC field, which is the selection of post-certification test samples at factories manufacturing CCC products in the whole Mainland.

⁸ CCC is a mandatory product certification system to ensure the quality and safety of products that tap into the Mainland China market are up to domestic standards. CCC mark is required for both Chinese manufactured and foreign imported goods listed on the CCC catalogue (covering 17 product types).

The Greater Bay Area (“GBA”)

22. Based on the principle of “Institution-led, market-driven, benchmarking against international standards”, the State Administration for Market Regulation has invited practitioners in Guangdong, Hong Kong and Macao to participate in taking forward the GBA Certification Scheme. The GBA Certification Alliance was established in September 2022 by certification bodies in the three places with the support and coordination of the three governments, which is tasked with researching and formulating the implementation rules of the GBA Certification Scheme for voluntary adoption by the T&C industry. Through the coordination of the ITC, the first group of organisation members of the Alliance include 10 accredited T&C bodies in Hong Kong.

23. At the Announcing Ceremony on 24 April 2023, the Guangdong Administration for Market Regulation announced the list of 110 GBA Standard items, covering 25 fields, including food quality and safety, Cantonese cuisine, transportation, mechanical and electrical products, medical care, nursing care, education, e-sports, etc. The ITC had disseminated to the T&C industry in a timely manner the latest information about the list on the day of the event. We will continue to encourage and coordinate the active participation of the Hong Kong T&C industry in the GBA Certification Scheme.

24. We have long been publicising Hong Kong’s T&C services in the GBA. For example, the HKCTC has jointly participated with the local industry in the China Hi-tech Fair held in Shenzhen since 2016. We have also set up booths in the trade fairs organised in Guangzhou and Shenzhen by the HKTDC since 2019 to promote the strengths of Hong Kong’s T&C services to enterprises in the GBA.

25. Due to the constraints imposed by the epidemic, we have duly adjusted our strategy to go online when promoting Hong Kong’s T&C services. In this regard, we have launched three rounds of digital advertising campaigns at various junctures with advertisements placed on a number of targeted popular digital platforms in the Mainland. With the epidemic under control and the resumption of market activities, we would step up our online and offline promotion efforts, targeting manufacturers and traders in the GBA cities, with the focus on the competitive edges of Hong Kong’s T&C services, including high level of integrity, robust intellectual property protection and mature international network, which would add value to GBA products in reaching other parts of the world.

ESG

26. ESG is a hot topic around the world, and various stakeholders are paying attention to the performance of the sustainable and socially responsible practices by enterprises. In 2021 and 2022, the ITC lined up several sharing sessions for the industry representatives to meet with the regulatory authorities and government departments to introduce the range of services that the T&C industry could offer in supporting ESG compliance, carbon emission reduction, offsetting and neutralisation. We also organised webinars on topics such as the Hong Kong and worldwide regulations and standards regarding environmental protection, the use of the services offered by the local T&C industry in taking forward various ESG and sustainability initiatives.

(d) Promotion to the General Public

27. In order to enhance public understanding of the important role played by T&C services in assuring product safety and quality, publicity and promotion have been carried out with more frequent use of digital channels in a lively manner in recent years, with a view to stimulating consumer demand for tested and certified products.

28. We published a series of articles highlighting the importance of T&C in daily life in a news app from February to April 2021. Moreover, we also published in a news app another series of articles, covering topics like ESG, accreditation, different product testing, and certification services from March to July 2022. Every year, the HKCTC participates in the InnoCarnival by setting up a booth to introduce to the public the merits of T&C services through exhibition and interactive games. In 2021 and 2022, the HKCTC booth attracted over 7 000 visitors.

ADVICE SOUGHT

29. Members are invited to note the latest development of the T&C industry as set out in this paper.

**Innovation, Technology and Industry Bureau
Innovation and Technology Commission
June 2023**

Services Provided by the Hong Kong Accreditation Service

- Hong Kong Accreditation Service (“HKAS”) provides accreditation for laboratories, inspection bodies and certification bodies located in Hong Kong, through the Hong Kong Laboratory Accreditation Scheme (“HOKLAS”), Hong Kong Inspection Body Accreditation Scheme (“HKIAS”) and Hong Kong Certification Body Accreditation Scheme (“HKCAS”) respectively.

- The primary service targets of the HOKLAS are testing laboratories. Accreditation services available under this Scheme cover the following testing scope:
 - Chemical test (e.g. analyses of gold and silver fineness as well as gas appliances);
 - Chinese medicine (e.g. analyses of pesticide residues and heavy metals in Chinese medicine);
 - Construction materials (e.g. physical tests on concrete, cement and steel);
 - Electrical and electronic product (e.g. product safety and EMC tests);
 - Environmental testing (e.g. air quality and wastewater tests);
 - Food (e.g. composition analysis and contaminant tests);
 - Forensic testing (e.g. forensic toxicology and DNA analyses);
 - Medical testing (e.g. clinical microbiology and haematology examination);
 - Veterinary testing (e.g. anatomical pathology examination);
 - Proficiency testing providers (e.g. proficiency testing for medical testing and chemical testing);
 - Pharmaceutical products (e.g. microbiological examination and chemical composition analysis for pharmaceutical products);
 - Physical and mechanical testing (e.g. safety testing of consumer products and gemstone testing);
 - Reference material producers (e.g. production of reference materials for food and Chinese medicine);
 - Testing Required by the China Compulsory Certification System (CCC) (e.g. relevant testing for toys and household products);

- Textiles and garments (e.g. flammability and performance tests for garments);
 - Toys and children's products (e.g. chemical and physical tests for toys);
 - Calibration service (e.g. calibration of balance, weights and thermometer); and
 - Miscellaneous (e.g. medical face mask).
- Accreditation for inspection services available under the HKIAS includes:
 - inspection of consumer products;
 - inspection of construction products;
 - inspection of indoor air quality; and
 - scene of crime investigation.
- Accreditation for services provided by certification bodies under the HKCAS includes:
 - Management system certification, including:
 - Quality Management System Certification (ISO 9001) ;
 - Environmental Management System Certification (ISO 14001) ;
 - Energy Management System Certification (ISO 50001) ;
 - Occupational Health and Safety Management System Certification (ISO 45001) ;
 - Food Safety Management System Certification (ISO 22000) ;
 - Information Security Management System Certification (ISO 27001);
 - Residential Care Homes (Elderly Persons) Service Providers' Management System Certification;

- Product certification, including:
 - construction materials and products;
 - consumer products;
 - food;
 - composite wood products;
 - Chinese medicine; and

- Greenhouse gas validation and verification.

Enclosure II

Programmes on Testing and Certification Offered by Higher Education Institutions in Hong Kong

Institution	Programme Name
<u>Master's Degree</u>	
The Chinese University of Hong Kong	Master of Science in Accreditation Chemistry
Hong Kong Baptist University	Master of Science in Analytical Chemistry
The Hong Kong University of Science and Technology	Master of Science in Analytical Chemistry
The Hong Kong Polytechnic University [#]	Master of Science in Sustainable Technology for Carbon Neutrality
<u>Bachelor's Degree</u>	
Hong Kong Metropolitan University	Bachelor of Applied Science (Honours) in Integrated Testing, Inspection and Certification
	Bachelor of Science (Honours) in Food Testing Science
	Bachelor of Science (Honours) in Testing Science and Certification
Hong Kong Baptist University	Bachelor of Science (Honours) in Analytical and Testing Sciences
The Hong Kong Polytechnic University	Bachelor of Science (Honours) in Analytical Sciences for Testing and Certification
Technological and Higher Education Institute of Hong Kong	Bachelor of Science (Honours) in Testing and Certification
<u>Higher Diploma</u>	
Vocational Training Council	Higher Diploma in Analytical Science

[#] To launch in September 2023