

**By Fax and Post (2978 7569)**

14 June 2018

Mr Desmond LAM,  
Clerk to Panel on Commerce and Industry,  
Legislative Council Complex,  
1 Legislative Council Road,  
Central, Hong Kong.

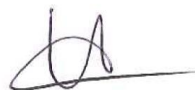
Dear Mr LAM,

**Panel on Commerce and Industry  
Meeting on 19 June 2018**

**Major views and questions expressed by  
members of the Panel on Commerce and Industry on  
the work of the Research and Development Centres**

I refer to the table of summary of views and questions on the operation and performance of the five Research & Development Centres expressed by members during the discussions on the subject in the past three years (i.e. from 2015 to 2017). We are pleased to provide the Administration's response as enclosed herewith for your reference.

Yours sincerely,



(Bryan Ha)  
for Commissioner for Innovation and Technology

cc ITB (Attn: Mr Ricky CHONG) 2530 0837  
ITC (Attn: SEO(A))

## **Panel on Commerce and Industry**

### **The Administration's Response to the major views and questions expressed by members of the Panel on Commerce and Industry on the work of the Research and Development Centres**

#### **Commercialisation of Research and Development (R&D) Results**

- 1. What initiatives and efforts the Administration had taken to promote the R&D results of the R&D Centres and the ways to enhance the commercialisation of R&D results?**
- 2. Whether the R&D Centres had put stronger emphasis on collaboration with the industry and continued to conduct more demand-driven applied R&D projects to facilitate technology transfer to the industry? If so, details of the above.**
- 3. Whether the R&D Centres had stepped up efforts in promoting project technologies to the industries and fostered commercialisation of the R&D outcomes as well as commercial application of the R&D deliverables in the private sector, thereby generating commercial benefits for the commerce and industry sectors in Hong Kong? If so, details of the efforts made.**

The Government has been promoting and supporting applied R&D projects which contribute to the upgrading of technology levels of industries, as well as encouraging and subsidising projects with greater potentials for realisation/commercialisation through the Innovation and Technology Fund (ITF).

Established in 2006 with funding support from the ITF, the R&D Centres not only contribute to the applied research in key areas, but also work closely with the industry to encourage investment in R&D in Hong Kong and drive the commercialisation of R&D results. The R&D Centres put strong emphasis on collaboration with the industry and actively undertake industry-driven and market relevant R&D projects, and subsequently transfer the technology to the industry through contract research or licensing arrangement. When seeking funding support for applied R&D projects under the ITF, the R&D Centres are required to provide a holistic plan on

realisation/commercialisation in their applications for evaluation by their technology committees/panels. The R&D Centres are required to provide information to the Innovation and Technology Commission (ITC) upon completion of the projects to facilitate evaluation on the effectiveness of the funded projects.

Besides, the R&D Centres can conduct trials of their R&D results in the public sector through the Public Sector Trial Scheme (PSTS) to collect user feedback and then fine-tune the research results so that the products can better meet the market needs. For details, please refer to the response in Parts 4 and 5.

As at the end of March 2018, there were 278 R&D projects being undertaken by the R&D Centres, 173 of which involved the participation of the industry, with 345 companies participating in these R&D projects. In the past three financial years, the five R&D Centres signed a total of around 187 licensing agreements with the industry; while the income arising from contract research, licensing and royalty amounted to over \$120 million.

In recent years, we are starting to see results in the realisation/commercialisation of some ITF-funded projects. Some examples related to the R&D Centres are as follows:

- (a) In recent years, the Nano and Advanced Materials Institute has, in collaboration with several enterprises, successfully developed different types of nanofiber materials, ranging from batteries to healthcare products. Among which, the Smart Mask, equipped with highly breathable, bacteria-killing and suspended particulates PM2.5-filtering functions, was awarded the Gold Medal with Jury's Commendations at the 2017 International Exhibition of Inventions of Geneva. At present, high-performance mask products successfully developed by Hong Kong businesses and manufactured in Hong Kong are already brought on to the local market.
- (b) The Hong Kong Research Institute of Textiles and Apparel (HKRITA) has been focusing on the R&D of textile recycling, including the development of a sanitised and enclosed industrial system to recycle old clothes into fibres for the re-production of various textiles products such as yarn, fabric and garments. A local company is now planning to utilise

this technology to set up an environmentally-friendly automated spinning mill in Hong Kong.

- (c) The Logistics and Supply Chain MultiTech R&D Centre (LSCM) has, in collaboration with the University of Science and Technology, developed a Smart Wi-Fi access-point (Smart AP) system for tracking users' indoor location and information. The Smart AP system precisely locates the users via the Wi-Fi signal generated by mobile phones, providing a truly smart Wi-Fi solution for the smart city. The system has been commercialised and deployed in shopping centres for flow analysis and management.

Currently, the five R&D centres have to return their income generated from ITF-funded projects (e.g. through commercialisation of project outcomes) to the ITF. To further incentivise the commercialisation of R&D results of the R&D Centres, the Government plans to allow the Centres to retain the income for use in strategic activities, such as technology and market analyses, infrastructure building, staff development or experimental projects etc., subject to the endorsement of the Finance Committee (FC) of the Legislative Council.

#### **Promoting the use of R&D results in the public sector**

- 4. In respect of the difficulties faced by the R&D Centres and their partner companies of collaborative projects in promoting the use of R&D results in the public sector, whether the Administration had –**
- (a) rendered policy support and other relevant assistance to the R&D Centres and their partner companies to foster wider application of R&D results in different sectors; and**
  - (b) enhanced the coordination between the relevant government departments in providing ample assistance to the R&D Centres?**

**If so, details of such support and assistance.**

- 5. Noting that the results of R&D projects of the R&D Centres aimed at improving quality of life, whether the public sector had widely applied the R&D results so as to enhance the commercialisation of the R&D results in the open market; and whether government departments had expressed their intention to adopt the relevant R&D results in the early stage of the R&D projects? If so, details of the above.**

The PSTS provides support to organisations (including the R&D Centres) that have completed ITF R&D projects for production of prototypes/samples and conducting of trials in the public sector to facilitate and promote the realisation and commercialisation of R&D results of ITF projects.

In 2014, we significantly raised the funding ceiling for trial projects undertaken by the R&D Centres from 30% to up to 100% of the actual cost of the R&D projects funded by ITF. The purpose is to encourage the R&D Centres to conduct trials in larger scale, which would facilitate a more holistic assessment of the new technology in order to help improve the products and services, thereby fostering wider application.

Meanwhile, we have also been promoting the adoption of R&D results under ITF projects (including those of the R&D Centres) among government departments and other public organisations, and from time to time introducing PSTS to various government departments. For example, we provided briefings on PSTS to colleagues of the Electrical and Mechanical Services Department on its Innovative Technology Day in December 2017. Some examples of R&D results of the R&D Centres adopted by public organisations to improve citizens' quality of life are as follows:

- (a) LSCM has collaborated with the Hong Kong Customs and Excise Department to implement the Single E-lock Scheme, which reduces customs clearance time through the seamless clearance service provided by Internet of Things and e-lock-based technology. The Scheme has been adopted in over 30 control points in the Pearl River Delta (PRD) region and has extensively facilitated the transshipment traffic to the Guangdong Province;

- (b) LSCM has developed a radio-frequency identification (RFID) enabled parcel locker system for integration with the iPostal Stations of the Hongkong Post. The system allows convenient parcel collection by customers at the iPostal Stations outside office hours, and enables the Hongkong Post to obtain real time information on the availability of individual lockers and parcel pick-up status;
- (c) Developed by the Automotive Parts and Accessory Systems R&D Centre (APAS), the Dual Channel Fast Charger can charge two electric vehicles simultaneously and the charging time is shortened from an average of 7-8 hours to about 20 minutes. The Hong Kong International Airport, the Water Supplies Department, Hong Kong Police Force, and the Hong Kong Housing Society have installed APAS's charger and conducted trials on it;
- (d) HKRITA, LSCM, and Hong Kong Applied Science and Technology Research Institute have co-developed a vest jacket with tracking function for elderly. Upon trials of the jacket, a public organisation has placed a procurement order for its 11 elderly centres. This R&D achievement can assist the staff of the elderly centres in taking care of the elderly in a more efficient manner; and
- (e) In collaboration with the Airport Authority Hong Kong, LSCM has developed a barcode and RFID scanner, which allows passengers to print luggage tags at home and self-check-in luggage, thereby reducing waiting time at the check-in counter. The system has already been adopted by 31 airlines.

As at end-March 2018, 130 projects of the R&D Centres were funded under PSTS, involving funding of over \$230 million with more than 180 public organisations (including government departments) participating in the trials of new products or services. Besides, the R&D Centres have been keeping close contact with the public sector, with a view to promoting their adoption of relevant R&D results.

## Development direction of the R&D Centres

- 6. Had the Administration strengthened the promotion of commercialisation of R&D results of the R&D Centres in the cities of the PRD and Guangdong-Hong Kong-Macao Bay Area (Bay Area), and the neighbouring cities of Southeast Asia? Had the Administration also identified R&D opportunities in the Bay Area for the advancement of innovation and technology (I&T)?**

The R&D Centres organise and participate in international conferences and exhibitions from time to time to introduce their latest R&D results to industries across the world. The R&D Centres will continue to actively promote their R&D results in the cities of the PRD and the Bay Area, and the neighbouring cities of Southeast Asia, with a view to accelerating commercialisation of their R&D results.

Currently, the R&D results of the R&D Centres have also been adopted in the Mainland and Southeast Asia, including:

- (a) In collaboration with the trade declaration authority in Zhuhai, LSCM is developing a trade facilitation platform connecting Hong Kong's logistics industry with the Zhuhai E-Port to facilitate import and export trade declaration. Through the use of artificial intelligence and big data analytics, the platform will suggest classification codes for the traded goods, thereby reducing the processing time of trade declaration and providing a more accurate estimation on the tariff rates. The platform will be conducive to boosting the import and export trade in the Bay Area. LSCM is collaborating with various logistics associations for commercialisation opportunities; and
- (b) The Bus Infotainment System developed by APAS provides attractive features such as online programme content updates, online purchasing and enhanced human-machine interface, thereby enhancing passenger experience for different types of mass transportation. The first generation of the system has been successfully

commercialised in Thailand. Subsequently, APAS has developed the second generation, which has already passed the installation type approval of Transport Department. At present, the system has been installed on 200 cross border buses.

The Government has long been seeking collaboration opportunities with research institutions in the Mainland (including the Bay Area) for the advancement of I&T. In 2004, the Guangdong-Hong Kong Technology Cooperation Funding Scheme was launched to provide funding for projects with an element of Guangdong/Hong Kong cooperation, with an aim to enhance the level of collaboration on R&D between Hong Kong and Guangdong Province, and strengthen the efforts of Hong Kong and the Mainland in respect of advanced technology and transformation of technological achievements. To further step up collaboration between Hong Kong and other Mainland provinces, we are now discussing the operation details of a Mainland-Hong Kong Joint Funding Scheme with the Ministry of Science and Technology, so as to support and encourage cooperation between research institutions in both places.

Besides, the Innovation and Technology Bureau also actively participates in the work related to the development of an international technology and innovation hub in the “Development Plan for the Guangdong-Hong Kong-Macao Bay Area” and takes forward the development of the “Hong Kong-Shenzhen Innovation and Technology Park” in the Lok Ma Chau Loop. We also maintain close communication with various overseas science and research institutions to explore collaboration opportunities with top-tier global science and research institutions.

### **Attracting young talents to join the R&D sector**

- 7. Had the Administration promoted the advantages and benefits of joining the R&D sector to the young people, especially through the electronic media and social media, so as to attract more young talents to join the industry?**

To encourage university graduates to pursue a career in the R&D sector, the Internship Programme supports ITF projects and incubatees/I&T tenants of HKSTPC and Cyberport to hire local



graduates as R&D interns, thereby nurturing more I&T talent. Since the launch of the programme in 2004, we have supported around 3 200 interns with funding of over \$710 million, of which around 600 and 850 having their internship at I&T companies and R&D Centres respectively.

Besides, the Government will launch a 5-year pilot Technology Talent Scheme in the third quarter of 2018, which comprises a Postdoctoral Hub programme to provide funding support for organisations undertaking R&D projects approved under the ITF as well as incubatees and I&T tenants of HKSTPC and Cyberport to recruit postdoctoral talent for R&D work.

Furthermore, the Hong Kong Productivity Council established an Inno Space in October 2017 to provide workspace and technical support to start-up entrepreneurs, students and graduates and assist them in developing innovative ideas into industrial design, which may subsequently be translated into products through prototyping, so as to nurture a start-up culture in Hong Kong and support re-industrialisation.

To enhance public understanding of I&T and encourage local students to pursue a career in research, ITC collaborates from time to time with HKSTPC, youth groups, social service agencies, the academic and business sectors, relevant government departments, etc. to organise promotional events including competitions, talks, scholarship award schemes, seminars, etc., and supporting various bodies through the General Support Programme under the ITF to organise events which help foster an I&T culture. Meanwhile, ITC will make use of the monthly e-Newsletter and social media like Facebook to enhance young people's understanding of R&D and I&T. In 2018-19, ITC will continue to organise and support various promotional and educational activities, such as organising the InnoTech Month (including the 9-day InnoCarnival); and supporting the Hong Kong Student Science Project Competition, the Innovation and Technology Scholarship Award Scheme, and the Joint School Science Exhibition.

### **Operating expenditures of the R&D Centres**

- 8. In view of the feedback from staff of the R&D Centres about the operational difficulties of having to obtain approval for funding under the ITF which might hinder the smooth operation of the**

**R&D Centres, members considered that while it was essential to monitor the performance and review the operation of the R&D Centres to ensure proper use of public funds, the Administration should avoid micro-managing the operation of the R&D Centres. What measures the Administration had taken to address the members' concern?**

- 9. Noting that the total operating expenditure of the R&D Centres constituted a sizeable proportion of their annual R&D expenditure, whether the R&D Centres had proactively explored ways to lower the operating expenditure and increase the commercialisation income so as to enhance their cost-effectiveness? If so, details of the above.**

ITC has been facilitating the smooth operation of the R&D Centres while maintaining appropriate monitoring of their performance and operation through promulgation of guidelines on different areas, such as procurement policy and arrangements pertaining to intellectual property and related matters for ITF-funded projects.

Besides, in order to allow the R&D Centres to commence suitable R&D projects in a more flexible manner, we have put in place fast-track procedures for processing their R&D projects. Without the need to be assessed by the expert panels of ITC, their project proposals are directly vetted by the respective technology committees/panels of the R&D Centres. Once endorsed by the technology committees/panels, the project proposals can be submitted to ITC for approval.

Besides the cost for administrative support which comprises expenses related to the operation of the R&D Centres' headquarters, including electricity, other utilities, accommodation cost, salaries and related costs for administration staff, the operating expenditure of the R&D Centres also covers the expenditure for direct research (such as contract research), and expenses related to commercialisation and marketing. With a view to further enhancing their cost-effectiveness, the R&D Centres will actively explore ways to lower the operating expenditure from time to time and constantly identify means to increase commercialisation income, such as providing consultancy and contract research services.

Whether R&D projects could be commercialised depends on a number of factors, including changes in the market and other

competitive technologies available in the market. Hence, it is particularly important that R&D projects should be market-driven and able to meet the needs of the industry. Indeed, the R&D Centres have obtained increasing support from the industry. The industry income has been rising continuously over the past few years, from \$180 million in 2015-16 to \$243 million in 2017-18, which demonstrates that the projects of the R&D Centres can better meet the needs of the industry. The Government would ask the R&D Centres to continue to maintain close communication with the industry to learn more about its needs, so as to further solicit support for their R&D works.

### **Setting relevant performance indicators**

#### **10. Had the Administration set quantifiable commercialisation targets as success indicator to evaluate individual R&D Centres' performance on R&D achievements, collaboration with the industry, commercialisation and technology transfer, etc.?**

During FC's discussion of the additional allocation to the R&D Centres in late 2015, there were suggestions that the Government should set new performance indicators. In this connection, we briefed Members on the proposed new performance indicators at the Panel meeting on 21 June 2016 and 20 June 2017. One of the indicators is the "level of income received from the industry". The indicator covers sponsorship from the industry for their R&D projects, income arising from licensing/royalty and contract services, and other income. The R&D Centres all reached the target level of industry income of 30% in 2017-18, showing the support of the industry to the Centres.

Furthermore, we will also adopt other performance indicators, such as the number of R&D projects involving industry participation, the number of companies participating in the R&D projects, the number of organisations benefitting from the PSTS, the number of interns engaged, the number of patents filed, etc., to assess the R&D Centres' performance in different aspects.

## **Information to be included in future annual reports to the Panel**

- 11. Had the Administration arranged to include, in its future annual reports to the Panel, information on the R&D Centres' performance, such as the number of R&D projects involving industry participation, number of companies participating in the R&D projects, number of organisations benefiting from Public Sector Trial Scheme, number of interns engaged, and number of patents filed, etc.?**

From 2018 onwards, we will set out the information of the relevant new performance indicators in the annual updates on the progress of the R&D Centres for Members' reference.