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Panel on Commerce and Industry

Meeting on 20 June 2017

**Updated background brief on the Research and Development Centres
set up under the Innovation and Technology Fund**

Purpose

This paper provides updated background information on the Research and Development ("R&D") Centres set up under the Innovation and Technology Fund ("ITF").¹ It also summarizes the views and concerns expressed by members on the subject matter during previous discussions.

Background

2. On 24 June 2005, the Finance Committee ("FC") approved a total commitment of \$273.9 million under ITF for the establishment of the four R&D Centres, namely Automotive Parts and Accessory Systems R&D Centre ("APAS"), R&D Centre for Logistics and Supply Chain Management Enabling Technologies ("LSCM"), Hong Kong Research Institute of Textiles and Apparel ("HKRITA") and Nano and Advanced Materials Institute ("NAMI"), and their first five-year operation up to 31 March 2011 with a view to driving and co-ordinating applied R&D in selected focus areas and

¹ The Innovation and Technology Fund ("ITF") was set up as a statutory fund under the Public Finance Ordinance (Cap. 2) by resolution of the Legislative Council on 30 June 1999. On 9 July 1999, the Finance Committee ("FC") approved the proposed injection of \$5 billion into ITF and ITF came into operation on 1 November 1999. On 27 February 2015, FC approved a further injection of \$5 billion into ITF. ITF is currently administered by the Innovation and Technology Commission and comprises nine programmes, namely, the Innovation and Technology Support Programme, General Support Programme, University-Industry Collaboration Programme, Enterprise Support Scheme, Public Sector Trial Scheme, Research and Development ("R&D") Cash Rebate Scheme, Technology Voucher Programme, Midstream Research Programme for Universities and Technology Start-up Support Scheme for Universities.

promoting commercialization of R&D outcome.

3. The four ITF-funded R&D Centres were established in April 2006. At the same time, the R&D Centre for Information and Communications Technologies ("ICT") was also set up under the Hong Kong Applied Science and Technology Research Institute ("ASTRI") with its operating expenditure funded separately by the Government's annual recurrent subvention. Unlike the other four R&D Centres which have been established as independent legal entities, ICT has been established within the existing operational infrastructure of ASTRI, which is a limited company wholly owned by the Government. The five R&D Centres served as focal points to drive and coordinate applied R&D and to promote commercialization of R&D results and technology transfer.

4. On 19 June 2009, having regard to the performance of the R&D Centres after an interim review, FC approved a further increase in the funding commitment by \$369 million to extend the operation of APAS, LSCM, HKRITA and NAMI for three years up to 31 March 2014.

Comprehensive review on the Research and Development Centres in 2011

5. In 2011, the Government conducted a comprehensive review on the operation and overall performance of the R&D Centres for their first five years ("comprehensive review of 2011"). With the support of the Panel on Commerce and Industry ("the Panel") and having regard to the outcome of the comprehensive review of 2011, FC approved an additional commitment of \$275.3 million on 11 May 2012 to support the continued operation of NAMI and APAS for another three years up to 31 March 2017.² FC further approved an additional grant of \$100.8 million under ITF on 24 January 2014 to support the continued operation of HKRITA (\$44.1 million) and LSCM (\$56.7 million) for another two years up to 31 March 2017.³ Their industry contribution target was also raised to 20%.

² For Hong Kong Research Institute of Textiles and Apparel ("HKRITA") and R&D Centre for Logistics and Supply Chain Management Enabling Technologies ("LSCM") which had not achieved an industry contribution of 15% in their first five years, their operation period was initially extended to 31 March 2015. The Administration undertook to closely monitor/review the performance of HKRITA and LSCM during a two-year observation period ending March 2013 (i.e. two years after the comprehensive review on the R&D Centres in 2011) with a revised industry contribution target of 18%.

³ At the meetings of the Panel on Commerce and Industry on 18 June and 19 November 2013, members were briefed by the Administration that both HKRITA and LSCM had exceeded the industry contribution target of 18% during the two-year observation period from 2011-2013 and their performance had shown sustained development and was generally satisfactory.

6. The total funding commitment approved by FC for the operating expenditure of the four R&D Centres for a total of 11 years (from April 2006 up to 31 March 2017) is \$1,019 million. The R&D expenditure of the R&D Centres are funded separately out of ITF on a project basis.

Comprehensive review on the Research and Development Centres in 2015

7. Following the comprehensive review of 2011, the Government conducted in 2015 a comprehensive review of the operation of the R&D Centres for the four-year period from 2011-2012 to 2014-2015 ("comprehensive review of 2015") to map out the way forward and long-term funding arrangements of the R&D Centres. The performance and operation of ASTRI were also covered in the review. Despite the different funding arrangements for operating expenditure, ASTRI was subject to the same mechanism of performance monitoring and expected to meet the same industry contribution target. The Administration briefed the Panel at its meeting on 16 June 2015 on the findings and recommendations of the review, including the proposal to extend the operation of the R&D Centres under ITF for four more years to 31 March 2021 with an additional funding commitment from ITF of \$677.6 million for the four R&D Centres funded by ITF. FC approved the said additional funding allocation on 11 December 2015.

The Innovation and Technology Bureau

8. The Innovation and Technology Bureau ("ITB") was established on 20 November 2015, and is responsible for formulating innovation and technology ("I&T") policies, thereby fostering the development of I&T and related industries in Hong Kong. ITB has set out nine directions and work priorities, including promoting R&D collaboration.⁴

9. According to the Administration, the R&D Centres not only would contribute to the applied research in key areas, their work and R&D results would also help to promote I&T development. The R&D Centres would work closely with the industry, thereby encouraging investment in R&D, promoting applied research and driving the commercialization of R&D

⁴ The nine directions and work priorities of the Innovation and Technology Bureau are –

- (a) Promoting research and development collaboration;
- (b) Promoting "re-industrialization";
- (c) Promoting investment on technology start-ups;
- (d) Studying the Smart City initiative;
- (e) Building Hong Kong into a Wi-Fi connected city;
- (f) Promoting the adoption of innovation and technology ("I&T") in addressing social issues;
- (g) Promoting the use of local technology products and services;
- (h) Augmenting the pool of I&T talents; and
- (i) Encouraging the collaboration among institutions.

results. Meanwhile, ITB would develop the I&T industry and nurture emerging industries, and continue to deepen Hong Kong's cooperation with the Mainland and overseas on I&T, demonstrating Hong Kong's strength as the "super-connector" for Hong Kong, the Mainland and the rest of the world. This would also be an important area of work of the R&D Centres.

New performance indicators from 2017-2018 onwards

10. During FC's discussion of the additional allocation to the R&D Centres in late 2015, there were suggestions that the Administration should set new performance indicators to assess the R&D Centres' performance in conducting R&D in collaboration with the industry in order to promote the latter's overall technological level. The Panel was briefed on 21 June 2016 that the Administration considered it appropriate to assess the performance of R&D Centres through "the level of income received from the industry". The indicator would cover sponsorship from the industry for their R&D projects, as well as income arising from licensing and contract services, etc.

11. The Administration would also consider adopting other performance indicators, such as the number of R&D projects with industry participation, the number of companies participating in the R&D projects, the number of organizations benefitting from the Public Sector Trial Scheme ("PSTS") etc. From 2018 onwards, the Administration would present these new performance indicators in the annual updates to the Panel.

Previous discussions

Panel on Commerce and Industry

12. Members received annual updates on the operation of the R&D Centres. In particular, members were also briefed on the comprehensive reviews of 2011 and 2015 at the meetings on 20 December 2011 and 16 June 2015 respectively. The Panel generally supported the role of R&D Centres to spearhead the advancement of applied R&D of Hong Kong, and hoped that the commercialization of local R&D results could bring about wider social and economic benefits to the community. The major concerns expressed by members at the meetings on 17 June 2014, 16 June 2015 and 21 June 2016 are summarized in the ensuing paragraphs.

Cost-effectiveness of the Research and Development Centres

13. Members enquired about the difficulties and challenges encountered by the R&D Centres in terms of their operation and development, as well as the commercialization of R&D results, at the meetings on 17 June 2014 and 16 June 2015 respectively.

14. As regards the commercialization of R&D results, at the meeting on 17 June 2014, some of the representatives of the R&D Centres replied that one of the key challenges was to identify and develop the technologies that were commercially viable and could address the industry's demands.

15. At the meeting on 16 June 2015, some members noted that the total operating expenditure of the R&D Centres constituted a sizeable proportion of their annual R&D expenditure, and urged the R&D Centres to proactively explore ways to lower the operating expenditure. The Administration replied that the operating expenditure of the R&D Centres covered the cost for administrative support which comprised expenses related to the operation of the R&D Centres' headquarters, including electricity, other utilities, accommodation cost, salaries and related costs for administration staff, as well as the expenditure for direct research, and expenses related to commercialization and marketing. At members' request, the Administration provided the breakdown of operating expenditure of the five R&D Centres, including the cost of providing administrative support and the respective ratio of the cost of administration support to the annual R&D expenditure of each R&D Centre in 2014-2015 vide LC Paper No. CB(1)1130/14-15(01) after the meeting.

Progress of commercialization of Research and Development results

16. At the meeting on 16 June 2015, some members called on the R&D Centres to also actively foster commercial application of the R&D deliverables in the private sector, besides promoting the use of R&D results in the public sector through PSTS.

17. The Administration replied that in recent years, the R&D Centres had become more proactive in reaching out to industry partners in conducting collaborative projects, which had a higher chance for the project outcomes to be adopted by the industry partners who would be responsible for commercializing the project outcomes.

18. At the meeting on 16 June 2015, some members expressed particular concern about some projects or technologies of the R&D Centres as they had not been successfully commercialized in the local market. To foster commercialization of R&D outcomes and generate commercial benefits for the commerce and industry sectors in Hong Kong, some members highlighted the importance of setting quantifiable commercialization targets as success indicators to evaluate the performance of the R&D Centres. The Administration replied that it would monitor the progress of commercialization of the R&D Centres and review whether other relevant performance indicators should be set to evaluate the R&D Centres' performance in R&D achievements, collaboration with the industry, commercialization and technology transfer, etc.

19. At the meeting on 21 June 2016, members called on wider application of the R&D results in the public sector and Government's initiative to put more efforts into promoting the R&D results of the five R&D Centres to enhance the commercialization of R&D results.

Industry participation and collaboration

20. Some members noted with concern that the industry was not very keen on collaborating with the R&D Centres in conducting R&D projects as the existing funding arrangements under ITF were too restrictive while the project vetting requirements and procedures were too complex and cumbersome to facilitate worthy projects to be undertaken quickly. The Administration responded that it would conduct a comprehensive review of the ITF to explore areas of improvements. It would take a critical look at the long-term funding arrangements for R&D projects and for the R&D Centres, including support for the private sector. Subsequently, the Panel was briefed on the comprehensive review of ITF, the final report on comprehensive review of ITF and the comprehensive review of 2015 at its meetings on 18 February and 18 November 2014, and 16 June 2015 respectively.

21. At the meeting on 21 June 2016, some members noted that some small and medium enterprises ("SMEs") and start-ups which were interested in sponsoring the R&D projects might not have sufficient funds for the required sponsorship, and asked whether there were measures in place to resolve this problem and encourage the collaboration among SMEs, start-ups, and the five R&D Centres.

22. The Administration advised that there were different types of R&D projects conducted by the R&D Centres. For collaborative projects, the level of industry contribution was at least 30% of the total project cost and the industry partner could obtain the ownership of the intellectual property ("IP") of the R&D projects if the level of industry contribution exceeded 50%. On the other hand, platform projects would require a minimum of only 10% of industry contribution, but the IP deriving from the R&D project would not be owned by the industry sponsor(s).

Finance Committee

23. FC discussed the funding proposal of \$677.6 million from ITF to support the continued operation of four R&D Centres (i.e. NAMI, HKRITA, APAS and LSCM) for another four years up to 2020-2021 at its meetings on 4 December and 11 December 2015. The major views and concerns of members are summarized in the ensuing paragraphs.

Innovation and technology policies

24. Some members opined that the Administration should strengthen

R&D-related projects and encourage enterprises to give extra injections of investment into R&D. These members suggested that the Administration should set a target for the development of I&T in terms of percentage share in the Gross Domestic Product ("GDP"). They suggested that the Administration should fully subsidize R&D projects and attract talents to develop their career in Hong Kong. Other members criticized the Administration for its failure to offer tax concessions for R&D projects and concessions in terms of land grant.

25. The Administration replied that it intended to step up its efforts in promoting R&D development, including encouraging the private sector to increase the investment in the relevant fields, and considered using the percentage share of R&D expenditures in the GDP as one of the reference indicators of development. As regards the recommendation concerning a taxation policy, further discussions were needed with the relevant policy bureau and stakeholders. The Administration further advised at the meeting on 11 December 2015 that the role of the Government was to provide assistance to facilitate I&T developments, such as sharing the risks of R&D.

Development directions of Research and Development Centres

26. Some members opined that as the development directions of R&D Centres were led by the industry concerned, the results attained might not be able to benefit the whole industry or catch up with the leading international development. Some members also noted that there was a recent trend for textiles and apparel industry to relocate to Southeast Asia. They requested the Administration to elaborate the future development directions of HKRITA, and the differences between such directions and those of other regions, such as Taiwan and South Korea.

27. The Administration and the representative of HKRITA advised that the development directions of HKRITA included areas where it had key competitive opportunities, such as high performance materials, wearable electronics, green materials, sustainable manufacturing, agile supply chains, and the sale of their patents. When comparing with other regions, such as Taiwan and South Korea, Hong Kong's development directions placed more emphasis on cotton and woolen clothing materials. The Government's plan was to attract the development of smart production of high value-added industries in Hong Kong, with a view to achieving the goal of re-industrialization.

Performance indicators of Research and Development Centres

28. A number of members noted that the income generated from the commercialization of R&D results of the four R&D Centres was on the low side, and called on the Administration to put forward quantifiable performance indicators in respect of the results of commercialization and

re-industrialization, as well as setting a timetable for conducting a value-for-money audit.

29. The Administration advised that the benefits of R&D results were not necessarily reflected in the commercialization income. Moreover, the Administration would also make reference to other data, such as the level of sponsorship from the industries received by the R&D Centres. It was considering the inclusion of a number of factors as performance indicators, and one such might be changed to "income from the industries", which would comprise sponsorship from the industries, licensing fees/royalties and contract services. Another indicator was the number of participating organizations under PSTS. The Administration hoped it could formulate suitable performance indicators with regard to the operations of the R&D Centres from 2017 to 2021, and would continue to work jointly with the R&D Centres in this regard and report the progress to the Panel in a timely manner.

30. At the special meeting of FC on 7 April 2016 to examine the Estimates of Expenditure 2016-2017, Members enquired whether the Government planned to raise the industry contribution target of the five R&D Centres to the original level of 40% after the review in 2015. The Administration replied that in 2016-2017, the Government would continue to apply the current industry contribution target of 20% as this should give the R&D Centres sufficient incentive to proactively reach out to the industry and allow flexibility for individual R&D Centres to undertake platform projects to continue to build up their technical expertise and capabilities.

Council meeting

31. At the Council meeting of 3 February 2016, Mr Charles MOK asked a written question about whether the Administration would request various stakeholders, including the R&D Centres, among others, to compile and publish more diversified statistics so as to increase their transparency to facilitate monitoring. The Administration replied that all stakeholders, including the R&D Centres, published their financial statements, progress reports, and other different information and data through different channels, including the Government Budget, annual reports, websites and press releases. Each institution would also report its work progress and outcomes regularly to the relevant committees of the Legislative Council.

Latest position

32. The Administration will brief the Panel on the operation of the R&D Centres in 2016-2017 on 20 June 2017.

Relevant papers

33. A list of relevant papers is set out in the **Appendix**.

Council Business Division 1
Legislative Council Secretariat
14 June 2017

List of relevant papers

Date of meeting	Meeting	Paper
17/6/2014	Panel on Commerce and Industry	<p>Administration's paper on "Progress report on Research and Development Centres for 2013-2014" (LC Paper No. CB(1)1595/13-14(05))</p> <p>Updated background brief on Research and Development Centres set up under the Innovation and Technology Fund prepared by the Legislative Council Secretariat (LC Paper No. CB(1)1595/13-14(06))</p> <p>Minutes of meeting (LC Paper No. CB(1)1976/13-14)</p>
16/6/2015	Panel on Commerce and Industry	<p>Administration's paper on "Progress report of Research and Development Centres for 2014-2015 cum comprehensive review on Research and Development Centres for 2011-2012 to 2014-2015" (LC Paper No. CB(1)971/14-15(03))</p> <p>Updated background brief on Research and Development Centres set up under the Innovation and Technology Fund prepared by the Legislative Council Secretariat (LC Paper No. CB(1)971/14-15(04))</p> <p>Administration's follow-up paper on "Administrative support in R&D Centres" (LC Paper No. CB(1)1130/14-15(01))</p> <p>Minutes of meeting (LC Paper No. CB(1)1223/14-15)</p>
4/12/2015 (Paper issued on 20/11/2015)	Finance Committee	<p>Administration's paper on Research and Development Centres (FCR(2015-16)33)</p> <p>Minutes of meeting (LC Paper No. FC165/15-16) (LC paper No. FC166/15-16)</p>

Date of meeting	Meeting	Paper
11/12/2015 (Paper issued on 20/11/2015)	Finance Committee	Administration's paper on Research and Development Centres (FCR(2015-16)33) Minutes of meeting (LC Paper No. FC202/15-16) (LC Paper No. FC203/15-16)
3/2/2016	Council	Question No. 22 on "Development of innovation and technology" raised by Hon Charles MOK (Hansard) (Page 4786-4804)
7/4/2016	Special meeting of the Finance Committee to examine the Estimates of Expenditure 2016-2017	Administration's replies to Members' initial written questions (Reply serial no. ITB132)
21/6/2016	Panel on Commerce and Industry	Administration's paper on "Progress report of Research and Development Centres for 2015-2016" (LC Paper No. CB(1)1045/15-16(05)) Updated background brief on the promotion of research and development and the Research and Development Centres prepared by the Legislative Council Secretariat (LC Paper No. CB(1)1045/15-16(06)) Minutes of meeting (LC Paper No. CB(1)1197/15-16)