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**Legislative Council**

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**Panel on Commerce and Industry**

**Meeting on 15 June 2021**

**Updated background brief on Research and Development Centres**

**Purpose**

This paper provides updated background information on the Research and Development ("R&D") Centres under the purview of the Innovation and Technology Commission. It also summarizes the views and concerns expressed by members of the Finance Committee ("FC") and the Panel on Commerce and Industry ("the Panel") during relevant discussions in recent years.

**Background**

2. In June 2005, FC approved a total commitment of \$273.9 million under the Innovation and Technology Fund ("ITF") for establishing the following four R&D Centres and their first five-year operation up to 31 March 2011:

- (a) Automotive Parts and Accessory Systems R&D Centre ("APAS") (renamed as Automotive Platforms and Application Systems R&D Centre in 2019);
- (b) Hong Kong Research Institute of Textiles and Apparel ("HKRITA");
- (c) Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies ("LSCM") (renamed as Logistics and Supply Chain MultiTech R&D Centre in 2018); and
- (d) Nano and Advanced Materials Institute ("NAMI").

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 as a limited company wholly owned by the Government.

4. In June 2009, having regard to the performance of the R&D Centres after an interim review, FC approved an increase in the funding commitment by \$369 million to extend the operation of four ITF-funded R&D Centres for three years up to 31 March 2014.

#### Comprehensive reviews on the Research and Development Centres

5. In 2011, the Administration conducted a comprehensive review on the operation and overall performance of the R&D Centres for their first five years. Having regard to the outcome of the comprehensive review, FC approved a commitment of \$275.3 million in May 2012 to support the continued operation of NAMI and APAS for another three years up to 31 March 2017.<sup>1</sup> FC further approved an additional grant of \$100.8 million under ITF in January 2014 to support the continued operation of HKRITA and LSCM for another two years up to 31 March 2017.<sup>2</sup> Their industry contribution target was also raised to 20%.

6. The Administration conducted in 2015 another comprehensive review of the operation of the R&D Centres for the four-year period from 2011-2012 to 2014-2015 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. In December 2015, FC approved an additional funding allocation of \$677.6 million from ITF to support the operation of the R&D Centres up to

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<sup>1</sup> For HKRITA and 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%.

<sup>2</sup> At the Panel meetings on 18 June and 19 November 2013, members noted that both HKRITA and LSCM had exceeded the industry contribution target of 18% during the two-year observation period ending March 2013 and their performance had shown sustained development and was generally satisfactory.

31 March 2021.

### New key performance indicators

7. Following the suggestions made by members during the discussion of the additional allocation to the R&D Centres in December 2015, the Administration set new key performance indicators ("KPIs") 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. One of the indicators is the level of industry income.<sup>3</sup> The Administration raised the target for the indicator to 30% from 2017-2018 onwards and also set other KPIs, including the number of on-going projects involving industry participation, the number of companies participating in on-going projects, the number of organizations benefitting from the Public Sector Trial Scheme ("PSTS"), the number of researcher interns engaged, and the number of patents filed and granted.

### Relaxing the rule on commercialization income

8. To incentivize commercialization of R&D results of ITF-funded projects and technology transfer activities, from 2017-2018 onwards, the R&D Centres can retain the income generated from those projects (e.g. income generated from the commercialization of project outcomes) for use in strategic activities, such as technology and market analyses, infrastructure building, staff development or experimental projects, etc. The arrangement is on par with that for universities or other public research institutions, and allows flexibility for the R&D Centres to pursue more strategic and non-project-specific initiatives conducive to the development of innovation and technology ("I&T").

### Latest funding position for the Research and Development Centres

9. FC approved in June 2020 the allocation of a total of \$1,015.1 million from ITF to support the continued operation of the four ITF-funded R&D Centres for another four years up to 31 March 2025. Since 2005, a total of \$2,711.7 million has been approved by FC to fund the operation of those R&D Centres.

10. According to the Administration, the R&D Centres act as a focal point for technology collaboration among the Government, industry, academia and research sectors and promote the adoption of local technology products and services through active participation in PSTS. By undertaking different types

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<sup>3</sup> The new indicator "level of industry income" of the R&D Centres covers industry contribution to their R&D projects, income arising from licensing/royalty and contract services, etc. It replaces the previous indicator "level of industry contribution" which measures only the industry contribution pledged in respect of their R&D projects.

of projects which include platform projects,<sup>4</sup> collaborative projects<sup>5</sup> and seed projects,<sup>6</sup> the R&D Centres work closely with the industry to encourage investment in R&D in Hong Kong for promoting applied research and driving commercialization of R&D results.

## **Previous discussions**

11. The major views and concerns expressed by members at the Panel meetings on 19 June 2018 and 19 November 2019, and FC meeting on 19 June 2020 are summarized in the ensuing paragraphs.

### Direction of future development

12. Noting that the development direction of the R&D Centres had remained largely unchanged since their establishment in 2006, members opined that it was time for the Administration to review and consolidate their development plans, with a view to (a) expanding the scope of R&D and undertaking more innovation-oriented and value-added projects; (b) opening up a career path in R&D for Hong Kong's youth; (c) exploring further scope of cooperation with I&T professionals from the Mainland in order to develop the vast Mainland market; and (d) enhancing the performance of the R&D Centres by raising the level of commercialization income against the amount of R&D investment. They also considered that the Administration should review the R&D Centres' operation, role and positioning, and KPIs, etc. to ensure proper use of public funds and avoid direct competition with the relevant industries and private R&D institutions.

13. The Administration advised that it had been encouraging the R&D Centres to conduct R&D in collaboration with the industries, and had seen an increasing number of such projects. Regarding the expansion of the scope of R&D projects, the R&D Centres had been maintaining close liaison with the industries to update themselves with the latest trends in R&D development (such as disruptive technologies). The Administration set no limits on the scope of R&D undertaken by the R&D Centres, and the R&D outcomes

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<sup>4</sup> The industry contribution of platform projects is at least 10% of the project cost. The industry sponsor(s) will not own the project intellectual property ("IP").

<sup>5</sup> The industry contribution of collaborative projects is at least 30% (for R&D Centre projects only) or 50% (for non-R&D Centre projects) of the project cost. The industry sponsor(s) will be entitled to utilize the project IP exclusively for a defined period or own the project IP.

<sup>6</sup> Seed projects are more forward-looking and exploratory projects that aim to provide foundation work for future platform/collaborative projects. No industry contribution is required for seed projects. The funding amount is capped at \$2.8 million per project.

developed could be applied across different industries. Meanwhile, the Administration would encourage the R&D Centres to continue their efforts to disseminate R&D outcomes to the industries, and promote trials of R&D outcomes in the public sector to facilitate commercialization of R&D deliverables.

14. The Administration also advised that it had introduced since 2017-2018 six new KPIs as mentioned in paragraph 7 above to assess the R&D Centres' performance. The Administration would review the operation as well as the role and positioning of the R&D Centres and made annual reports to the Panel.

15. Members urged the Administration to provide more opportunities for exchanges between the R&D Centres and their counterparts in the Mainland, particularly Shenzhen, and overseas countries. The Administration advised that there were no geographical boundaries in the realm of R&D. The R&D Centres had been actively engaging in R&D cooperation with various Mainland and overseas institutions and industries.

#### Commercialization of research and development outcomes

16. Members enquired about the number of R&D projects undertaken by the four ITF-funded R&D Centres since their inception which were successful in achieving commercialization of the relevant R&D deliverables, and whether such R&D deliverables were recognized, awarded or adopted by international institutions. Some members expressed concern that certain outstanding R&D deliverables (e.g. the nano-modified cementitious waterproof coating developed by NAMI) had not been put to extensive use in the market as they should have been, and urged the R&D Centres to put more effort in promoting project technologies to businesses so as to enable wider application of the technologies.

17. The Administration advised that the R&D Centres had achieved significant improvement in terms of commercialization of R&D results in recent years, as reflected by 72 licensing agreements signed by the five R&D Centres in 2018-2019 and a total of 259 from 2015-2016 to 2018-2019. From 2015-2016 to 2018-2019, the total commercialization income (including contract service income, licensing fees and royalties) received by the R&D Centres was \$186.89 million, averaging \$46.7 million per year, representing a 57% increase compared to the average annual commercialization income of \$29.7 million from 2011-2012 to 2014-2015. The R&D Centres had also received many local and international awards for their R&D achievements.

18. On promoting the use of the nano-modified cementitious waterproof coating technology to the industry, the Administration advised that it would collaborate with the Construction Innovation and Technology Application Centre under the Construction Industry Council whereas NAMI would

introduce the technology to major local property developers and construction companies.

19. In response to members' enquiry on whether the new production lines brought about by the R&D deliverables were retained in Hong Kong, the Administration advised that it had all along endeavored to retain those production lines in Hong Kong and would continue to encourage the enterprises concerned to set up their production lines in Hong Kong as far as possible. The Administration also advised that the income arising from the intellectual property rights would, regardless of whether the production line was based in Hong Kong, be based on sales volume.

#### Funding commitment

20. Members enquired about the reasons for the significant increase in the proposed additional funding commitment of \$1,015.1 million for four years of operation from 2021 to 2025, compared with the approved funding commitment of \$1,696.6 million for 15 years of operation from 2006 to 2021, and the expected performance of the four R&D Centres for the four years from 2021 to 2025.

21. The Administration advised that the total operating expenditure of the five R&D Centres between 2015-2016 and 2018-2019 was \$1,152.8 million, averaging \$288.2 million per year. This represented an increase of 26% compared to the average annual operating expenditure of \$228.6 million from 2011-2012 to 2014-2015. The number of R&D projects commenced by the R&D Centres in the four-year period from 2015-2016 to 2018-2019 had grown by about 53% compared with that in the four-year period from 2011-2012 to 2014-2015; and the industry contribution had also risen by 129% over the same period. With the kicking in of the boosting effect of the enhanced tax deduction for qualifying R&D expenditures, it was anticipated that the number of collaborative projects between the R&D Centres and private companies would increase further. There would also be an increase in the expenditure on manpower and equipment as the R&D Centres would strengthen promotion and liaison with the industry in respect of the commercialization work in the future.

22. Members enquired about the ratio of operating expenditure to R&D expenditure and asked whether there was room for compressing the operating expenditure of the R&D Centres.

23. The Administration advised that the ratio of operating expenditure to R&D expenditure was about 1:1.5 to 1:2.7 from 2015-2016 to 2018-2019. The R&D Centres had recorded an increase in operating expenditure which covered staff cost, accommodation cost, and equipment cost, etc. As projects undertaken by the R&D Centres had grown considerably in number and

complexity, the expenditure on procurement of equipment and on communication and liaison with the industry rocketed correspondingly. With R&D projects entering the industrialization and commercialization stage, the demand for in-house engineering personnel and the corresponding expenditure on human resources also increased quite a lot.

### Recognition of outstanding project teams

24. Some members suggested that the Administration should consider introducing an award system to recognize the outstanding R&D achievements of project staff or teams. The Administration advised that performance of the R&D teams was reflected in their appraisals and performance-based remuneration.

### Publicity

25. Members suggested that the Administration should step up its efforts to publicize and promote the R&D outcomes of various R&D Centres so as to enhance the recognition for them.

### **Council question**

26. At the Council meeting of 5 May 2021, Mr Holden CHOW asked a written question on whether the Administration had reviewed the operation of the R&D Centres and formulated new measures to enhance their effectiveness in commercialization.

27. The Administration advised that the R&D Centres had, in addition to conducting applied R&D in key areas, worked closely with the industry to carry out applied R&D projects that suited the needs of the industry, and to transfer technologies to the industry and strive to commercialize R&D outcomes. The commercialization income of the five R&D Centres in 2019-2020 had increased by about 40% compared to that in 2018-2019. The R&D Centres also conducted R&D projects relating to government departments. The related R&D outcomes could help participating departments improve their service quality and operational efficiency. On the whole, the R&D Centres had received more income other than industry sponsorship in recent years, including contract service income, licensing fees and royalties. Each of the Centres had also established their reputation and had become a reliable R&D partner internationally, with the Mainland and locally in the technology fields they belonged to. Facing the opportunities brought by the development of the Guangdong-Hong Kong-Macao Greater Bay Area ("Greater Bay Area"), the R&D Centres would actively promote their R&D outcomes, seek cooperation and development opportunities in the Greater Bay Area, and facilitate the

commercialization of their outcomes.

**Latest position**

28. The Administration will brief the Panel on 15 June 2021 on the operation of the R&D Centres in 2019-2020 and 2020-2021.

**Relevant papers**

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

Council Business Division 1  
Legislative Council Secretariat  
9 June 2021



## List of relevant papers

Date of meeting	Meeting	Paper
19/6/2018	Panel on Commerce and Industry	<p>Administration's paper on "Progress report on Research &amp; Development Centres for 2017-18" (<a href="#">LC Paper No. CB(1)1097/17-18(04)</a>)</p> <p>Updated background brief on the Research and Development Centres prepared by the Legislative Council Secretariat (<a href="#">LC Paper No. CB(1)1097/17-18(05)</a>)</p> <p>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 as set out in LC Paper No. CB(1)972/17-18(01) (<a href="#">LC Paper No. CB(1)1097/17-18(06)</a>)</p> <p>Administration's follow-up paper (<a href="#">LC Paper No. CB(1)124/18-19(01)</a>)</p> <p>Minutes of meeting (<a href="#">LC Paper No. CB(1)1343/17-18</a>)</p>
19/11/2019	Panel on Commerce and Industry	<p>Administration's paper on "Four-year progress report on Research &amp; Development ("R&amp;D") Centres and funding proposal to extend the operation of the R&amp;D Centres" (<a href="#">LC Paper No. CB(1)135/19-20(06)</a>)</p> <p>Updated background brief on the Research and Development Centres prepared by the Legislative Council Secretariat (<a href="#">LC Paper No. CB(1)135/19-20(07)</a>)</p> <p>Administration's follow-up paper (<a href="#">LC Paper No. CB(1)327/19-20(01)</a>)</p> <p>Minutes of meeting (<a href="#">LC Paper No. CB(1)330/19-20</a>)</p>

<b>Date of meeting</b>	<b>Meeting</b>	<b>Paper</b>
12/6/2020 & 19/6/2020	Finance Committee	Administration's paper on the funding proposal to extend the operation of the R&D Centres ( <a href="#">FCR(2020-21)1</a> )  Administration's follow-up papers ( <a href="#">LC Paper No. FC225/19-20(01)</a> ) ( <a href="#">LC Paper No. FC286/19-20(01)</a> )  Minutes of meetings ( <a href="#">LC Paper No. FC89/20-21</a> ) ( <a href="#">LC Paper No. FC81/20-21</a> )
5/5/2021	Council	Question No. 14 on "Research and Development Centres and parks for innovation and technology" raised by Hon Holden CHOW ( <a href="#">Government press release</a> )