

For discussion
on 20 March 2018

**Legislative Council
Panel on Commerce and Industry**

Injection into the Innovation and Technology Fund

PURPOSE

This paper briefs Members on the work of the Innovation and Technology Fund (“ITF”), sets out proposed initiatives to enhance its operation and seeks Member’s support to inject \$10 billion to enable it to continue operation beyond 2018.

BACKGROUND

Establishment of the ITF

2. The ITF was established by Resolution passed by the Legislative Council (“LegCo”) on 30 June 1999 as a statutory fund under section 29 of the Public Finance Ordinance (Cap. 2). Since establishment, it has been the Government’s main vehicle to finance projects that contribute to innovation and technology (“I&T”) upgrading in our manufacturing and services industries, as well as to support the development of the industries.

3. The Finance Committee (“FC”) approved an injection of \$5 billion into the ITF in 1999. Following a comprehensive review in 2014 of its operation by the Government, a number of enhancement measures¹ were recommended and were supported by this Panel. This Panel also affirmed the role of the ITF in the work of promoting I&T development in Hong Kong and supported its continued operation. FC approved an injection of \$5 billion into the ITF again in 2015².

¹ The recommendations included extending the funding scope to more downstream research and development activities, relaxing the sponsorship requirements for the Innovation and Technology Support Programme (“ITSP”), increasing the timeframe for research projects under the University-Industry Collaboration Programme (“UICP”) from two to three years, increasing the funding ceiling for the Patent Application Grant (“PAG”), subsuming the Research and Development Cash Rebate Scheme under the ITF (“CRS”), etc.

² In 2016, FC injected \$2 billion into the ITF to set up the Midstream Research Programme for Universities (“MRP”), and another \$2 billion for the establishment of the Innovation and Technology Venture Fund (“ITVF”).

Funding Schemes under the ITF

4. At present, there are 12 funding schemes under the ITF, each having its own objectives, scope, and modus operandi. They can be categorised as follows:

Supporting Research & Development (“R&D”)

- (a) the ITSP which supports R&D projects undertaken by local universities³ as well as public research institutions i.e. the Hong Kong Productivity Council, the Hong Kong Applied Science and Technology Research Institute (“ASTRI”), the Nano and Advanced Materials Institute (“NAMI”), the Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies (“LSCM”), the Hong Kong Research Institute for Textiles and Apparel (“HKRITA”), the Automotive Parts and Accessory Systems R&D Centre (“APAS”), the Vocational Training Council (“VTC”), the Clothing Industry Training Authority and the Hong Kong Institute of Biotechnology. As at end January 2018, 2 420 projects have been funded, with total funding of some \$8.5 billion. Some of the projects have been commercialised or spun off into technology businesses;
- (b) the UICP which provides dollar-for-dollar matching fund for R&D jointly undertaken by private companies and local universities. As at end January 2018, 334 projects involving six universities and 237 private companies have been supported, with total funding of \$410 million;
- (c) the Enterprise Support Scheme (“ESS”) which was introduced in 2015⁴ to provide dollar-for-dollar matching of up to \$10 million for private companies to carry out R&D projects. So far, the ESS Assessment Panel has considered 265 applications, of which 68 were supported. They involve 63 private companies, with private

³ Institutions funded by the University Grants Committee (“UGC”) have been eligible since 1999. Self-financing degree-awarding institutions registered under the Post-Secondary Colleges Ordinance (Cap. 320) have been eligible since July 2017. Please refer to Panel paper CB(1)916/16-17(03).

⁴ Please refer to Panel paper CB(1)344/14-15(04).

sector contribution of \$247 million and ITF contribution of \$208 million⁵;

- (d) the CRS which was introduced in 2010⁶ to provide cash rebate⁷ to private companies for their expenses in ITF R&D projects, or other R&D projects funded by these companies and undertaken by local universities/public research institutions. As at end January 2018, 1084 companies have been granted cash rebate of about \$331 million;
- (e) the MRP which was introduced in 2016 for midstream research projects undertaken by UGC-funded institutions⁸. It was open for the first tranche of applications from December 2016 to March 2017. After a peer review process, eight projects were supported, involving \$33.6 million. We have started to accept another round of applications recently;

Facilitating Technology Adoption

- (f) the Public Sector Trial Scheme (“PSTS”) which supports public sector bodies to try out new technologies or products developed in ITF projects and by incubatees/graduate tenants of the Hong Kong Science and Technology Parks Corporation (“HKSTPC”) and Cyberport⁹. As at end January 2018, 165 projects have been supported with funding of some \$270 million, benefitting over 240 organisations;

⁵ These projects have created over 500 R&D related jobs. The recipient companies have filed 13 patent applications. Of the nine completed projects, six have commercialised the project deliverables. Examples include a medical wearable device, a semiconductor component for high performance motor driving applications in drones, as well as a dual system based home media centre supporting internet-based media streaming features.

⁶ Please refer to Panel paper CB(1)614/09-10(03).

⁷ The level of cash rebate was 10% in 2010, and was increased to 30% in 2012, then to 40% in 2016. Please refer to Panel papers CB(1)1298/11-12(07) and CB(1)901/15-16(05).

⁸ Please refer to Panel paper CB(1)901/15-16(05) and CB(1)916/16-17(03).

⁹ Please refer to Panel papers CB(1)901/15-16(05) and CB(1)916/16-17(03).

- (g) the Technology Voucher Programme (“TVP”) which was introduced in 2016¹⁰ to subsidise local enterprises, on a 2:1 basis, to use technology solutions to improve productivity, or facilitate the upgrading/transformation of their business process. So far, 889 companies have submitted applications, 138 of them were returned as they were incomplete. For the 377 that have undergone assessment, 355 were supported with total funding of \$46.4 million. The success rate is 94%;

Nurturing Technology Talent

- (h) the Internship Programme which 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 talent¹¹. Since the launch of the programme in 2004, we have supported over 3 000 interns with funding of over \$680 million. Some 70% of them indicated that they would either continue their career or had planned to pursue a career in I&T-related areas;

Supporting Technology Start-ups

- (i) the Technology Start-up Support Scheme for Universities (“TSSSU”) which was launched in 2014 to support university professors and students to start technology businesses and commercialise their R&D results. An annual funding of \$4 million is provided to each university¹²;
- (j) the ITVF which was rolled out in September 2017 to co-invest with private venture capital funds in local I&T start-ups with an overall matching ratio of approximately 1:2¹³;

¹⁰ Please refer to Panel papers CB(1)901/15-16(05) and CB(1)555/16-17(03).

¹¹ The Internship Programme was launched in 2004. The ITF will pay the interns a maximum monthly allowance of \$16,000 and \$19,000 for graduates with a Bachelor’s degree and those with a Master’s or higher degree respectively. Please refer to Panel paper CB(1)901/15-16(05) and CB(1)916/16-17(03).

¹² Universities that receive the subsidies are the Chinese University of Hong Kong, the City University of Hong Kong, the Hong Kong Baptist University, the Hong Kong Polytechnic University, the Hong Kong University of Science and Technology and the University of Hong Kong.

¹³ Please refer to Panel paper CB(1)1045/15-16(03) and CB(1)449/17-18(07).

Promoting an I&T Culture

- (k) the General Support Programme (“GSP”) which supports non-R&D projects that help upgrade local industries and promote an I&T culture in Hong Kong. As at end January 2018, the programme has funded 184 projects with some \$260 million; and
- (l) the Patent Application Grant (“PAG”) which provides funding support for first-time patent applicants. So far, 2 026 applications have been funded, involving \$370 million and resulting in 625 applicants with patents granted¹⁴.

5. In addition to the above programmes, the ITF also funds, in full or in part, the operation of research centres/laboratories and university technology transfer offices to enable them to carry out more R&D work, commercialise their R&D outcome, or transfer their knowledge. The entities supported are:

- (a) four R&D centres i.e. NAMI, LSCM, HKRITA and APAS¹⁵;
- (b) the technology transfer offices (“TTOs”) of six UGC-funded universities. Each TTO may receive up to \$4 million each year¹⁶;
- (c) the 16 Partner State Key Laboratories (“PSKLs”) in Hong Kong. Each PSKL may receive up to \$5 million each year¹⁷; and
- (d) the six Hong Kong branches of Chinese National Engineering Research Centres (“CNERCs”). Each CNERC Hong Kong branch may receive up to \$5 million each year¹⁸.

¹⁴ PAG was set up in 1998 and merged into the ITF in 2002.

¹⁵ In December 2015, the FC approved \$677.6 million from the ITF to support the operation of the four R&D centres up to 31 March 2021. Please refer to FCR(2015-16)33. Since 2006, a total commitment of \$1,696.6 million ITF has been approved to fund their operation.

¹⁶ Further information on the work of the TTOs can be found in CB(1)436/15-16(06).

¹⁷ Further information on the work of the PSKLs can be found in Panel paper CB(1)436/15-16(06).

¹⁸ Further information on the work of the Hong Kong branches of CNERCs can be found in Panel paper CB(1)436/15-16(06).

JUSTIFICATION

New Initiatives

6. In the Policy Address delivered in October 2017, the Chief Executive has set a goal of doubling our Gross Expenditure on R&D (“GERD”) as a percentage of the Gross Domestic Product to 1.5% by 2022. To achieve this goal, we must not only continue the current funding programmes under the ITF, but would need to put in place more programmes to facilitate more R&D work, build a more vibrant I&T ecosystem in Hong Kong and stimulate more private investment in R&D. The following paragraphs set out the proposed new initiatives.

Technology Talent Scheme

7. We intend to set aside \$500 million under the ITF for a five-year pilot scheme to nurture and bring together more technology talent. The scheme comprises:

- (a) Postdoctoral Hub programme. It provides funding support to ITF recipients and incubatees/I&T tenants of HKSTPC/Cyberport to recruit up to two postdoctoral talent for R&D work. The ITF will provide a monthly allowance of \$32,000 for each postdoctoral researcher for up to 24 months. The concerned researcher must possess a doctoral degree in a science, technology, engineering and mathematics (“STEM”)-related discipline from either a local university or a well-recognised non-local institution¹⁹. We aim to launch this programme in the third quarter of 2018; and
- (b) Reindustrialisation and Technology Training Programme (“RTTP”). It subsidises local companies on a 2:1 matching basis to train their staff in advanced technologies, especially those related to “Industry 4.0”. At the moment, VTC is running a New Technology Training Scheme (“NTTS”)²⁰. To ensure better coordination and avoid duplication of resources, we will wind down the NTTS upon

¹⁹ This refers to those that are among the top 100 institutions in the related subjects in world university rankings such as the Quacquarelli Symonds World University Rankings, Shanghai Jiao Tong University (Academic Ranking of World Universities) and Times Higher Education World University Rankings.

²⁰ Established in 1992 under the predecessor of the Labour and Welfare Bureau, the NTTS funds local companies on a 1:1 matching basis to train their staff in new technologies. In 2016-17, the NTTS has funded 630 applications, involving about \$2.3 million.

the launch of the RTTP²¹. VTC will instead administer the RTTP, which will be overseen by its Innovation and Technology Training Board²². The total cost of implementing the RTTP is estimated to be \$17.7 million²³. We plan to launch the RTTP in the third quarter of 2018.

Establishment of Research Clusters

8. As announced in the 2018-19 Budget, the Government will earmark \$10 billion to support the establishment of two research clusters at the Science Park, one on healthcare technologies and another on artificial intelligence/robotics. The two clusters aim to attract top research institutions and technology enterprises to come to Hong Kong, facilitate their R&D collaboration with local R&D teams and pool technology talent from different places. The ITF will fund R&D projects carried out in these two clusters, following the mechanism adopted in public research institutions like ASTRI, NAMI, etc. The aforesaid \$10 billion will support the capital/operation costs of the research laboratories of non-profit-making institutions. We will seek funding on this separately.

Mainland-Hong Kong Joint Funding Scheme (“MHKJFS”)

9. In 2004, we joined hands with Guangdong and launched the “Guangdong-Hong Kong Technology Co-operation Funding Scheme” (“TCFS”) under the ITSP. Shenzhen joined the TCFS in 2005. As at end January 2018, we have supported 264 projects, involving funding of over \$860 million. In view of the increasing collaboration opportunities between Hong Kong and other provinces of the Mainland, we have been exploring with the Ministry of Science and Technology (“MOST”) the feasibility of setting up the MHKJFS to support and encourage such collaboration.

²¹ The NTTS is funded by the investment income of the New Technology Training Fund (“NTTF”) held by the VTC on trust for the Government. Upon the launch of the RTTP, the NTTS will cease to receive applications and the remaining fund will be returned to the Government.

²² VTC has set up 25 training boards to advise on manpower trends and industry development needs. The Innovation and Technology Board is one of them. It comprises representatives from major industry and trade organisations, various industry sectors, relevant public bodies as well as Government departments.

²³ VTC will contribute about \$6.1 million, comprising information technology (“IT”) system maintenance (\$1.8 million), provision of a senior project officer on a part-time basis (1.5 million) and administrative overheads (\$2.8 million), whilst the remaining \$11.6 million, covering IT system development, staff and publicity costs etc, will be borne by the ITF.

10. The funding model and modus operandi of the MHKJFS will largely follow that of the TCFS. Briefly, ITC and MOST will jointly invite applications once a year. We will vet the applications separately, following each party's own criteria. Only applications that are supported by both ITC and MOST will be approved. ITC and MOST will provide funding to the Hong Kong and Mainland partners respectively, and will monitor project progress according to their own requirements.

Partnership Research Programme (“PRP”)

11. At present, both the ITSP and the UICP support R&D collaborative projects. The former supports collaborative projects between local public research institutions and private companies, and the latter supports collaborative projects jointly undertaken by private companies and local universities²⁴. We plan to merge the UICP and the collaborative stream of the ITSP into a new PRP. Where the requirements of the two programmes differ, the more flexible arrangement will be adopted²⁵. The PRP will continue to require 50% industry sponsorship²⁶ for projects. We aim to roll out this consolidated programme in early 2019.

Relaxing the Rule on Commercialisation Income for R&D Centres

12. 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. There is no such requirement for universities or other public research institutions. We consider that such is not conducive to incentivising commercialisation of R&D results and limits the pursuit of more strategic and non-project-specific initiatives. We thus propose to allow R&D centres to retain the income for use in strategic activities, such as technology and market analyses, infrastructure building, staff development or experimental projects etc. The governing boards of the R&D centres may recommend to ITC the usage of the reserve. Submission of annual plans and audit reports for the reserve fund will also be required.

²⁴ Universities may undertake collaborative projects under the ITSP (collaborative stream) and the UICP, but would be subject to different rules such as sponsorship and project duration.

²⁵ E.g. the maximum project duration for ITSP and UICP are two and three years respectively. The PRP will adopt three years.

²⁶ Similar to collaborative projects under the ITSP, R&D Centres may seek approval for projects with 30% - 50% industry sponsorship.

Need for Funding Injection

13. As set out in paragraph 3 in the paper, the FC has approved a total of \$10 billion for the ITF. The total income was \$4.6 billion (mainly investment income from the Exchange Fund). Since its establishment in 1999, the ITF has supported over 7 000 projects, with funding of some \$13.6 billion. The uncommitted balance currently stands at \$1.4 billion.

14. In recent years, with the introduction of new programmes, there have also been substantial increases in ITF spending. In 2013-14, we disbursed about \$0.7 billion of ITF funds. In 2017-18, this has grown to over \$1.5 billion. We expect this to further increase to some \$2.1 billion in 2018-19, and the ITF to be depleted by the end of 2018. An injection of \$10 billion into the ITF is thus needed to support the continued operation of the existing funding schemes and the introduction of various new initiatives.

EXPECTED BENEFITS

15. The proposed injection of \$10 billion into the ITF will –
- (a) provide sustained and comprehensive support for applied R&D activities and raise the level of GERD in Hong Kong;
 - (b) encourage R&D collaboration between universities/public research institutions and private companies, and amongst the local, overseas and Mainland research communities;
 - (c) support the upgrading and development of our industries to meet the changing economic environment;
 - (d) encourage more private investment in R&D and technopreneurial activities;
 - (e) facilitate the application of R&D outcomes in the public sector and improve the quality of life of the community;
 - (f) create more I&T jobs and nurture more I&T talent; and
 - (g) facilitate technology adoption and foster a vibrant I&T culture and ecology in Hong Kong.

CONTROL AND REVIEW MECHANISM

16. There is already in place a robust control mechanism to ensure the proper and efficient use of the ITF. In brief, all applications are vetted by professional panels according to the assessment framework of the relevant funding programme²⁷. Each programme has its own guidelines on, inter alia, the usage of ITF funding, procurement arrangements, reporting and auditing requirements, disbursement of grants and return of residual funds, etc. All these information, alongside key information of approved projects²⁸, are available at ITF's website for public reference.

17. ITC conducts progress meetings/site inspections to verify the project progress and usage of funds as set out in the project reports. Funds will be disbursed only if the project is able to meet pre-set milestones. In case of non-compliance with the funding guidelines or where project progress is unsatisfactory, we may withhold the disbursement of funds. ITC will continue to enforce the control mechanism, review and make necessary enhancements as appropriate.

FINANCIAL IMPLICATIONS

18. The proposed injection of \$10 billion is projected to be adequate for the operation of the ITF for five years i.e. until 2022-23²⁹. Based on current expenditure pattern, the indicative cash flow is as follows –

Financial Year	2018-19	2019-20	2020-21	2021-22	2022-23	Total
\$ million	291	2,607	2,233	2,598	2,271	10,000

WAY FORWARD

19. Subject to Members' support, we will seek approval of the FC for the injection of \$10 billion into the ITF.

Innovation and Technology Bureau
Innovation and Technology Commission
March 2018

²⁷ The boards of R&D centres have their own technology committees/panels to vet project proposals.

²⁸ Key information includes the names of the project /recipient institution(s) and the funded amount.

²⁹ The actual cash flow may vary depending on the number and amount of funding applications approved under different programmes, and whether there would be any new programmes in the future.