

**For discussion  
on 22 June 2021**

**Legislative Council Panel on Development**

**Progress Report on the Implementation of the  
Construction Innovation and Technology Fund**

**PURPOSE**

This paper informs Members of the implementation progress of the \$1 billion Construction Innovation and Technology Fund (the Fund) which was launched in October 2018.

**BACKGROUND**

2. The Finance Committee approved in July 2018 a non-recurrent commitment of \$1 billion for setting up the Fund, with the aims to encourage the construction industry to use new but proven technologies developed within or outside Hong Kong, and to build the capacity of construction professionals to leverage innovation for continuous improvement in the industry. The Fund covers two aspects, namely technology adoption and manpower development and it was initially expected, subject to actual number of applications received, to last for about five years.

3. A Steering Committee on Construction Innovation and Technology Fund (SC-CITF) was set up in September 2018 to formulate and oversee the implementation and operation framework of the Fund. The SC-CITF, chaired by the Permanent Secretary for Development (Works) and comprising members from industry stakeholders and government officials, has convened regular meetings to monitor and review the administration of the Fund and make necessary refinements to the modus operandi to better cope with industry's needs.

4. The Construction Industry Council (CIC), being our implementation partner, has set up a Management Committee on the Construction Innovation and Technology Fund (MC-CITF) comprising council members of the CIC and government officials to manage the operation of the Fund. The MC-CITF is further supported by four Vetting Sub-committees (VSCs) comprising representatives from a wide spectrum of relevant fields including training,

technologies, construction, etc. The VSCs are responsible for assessing applications in the respective applicable technologies and manpower development. The CIC also provides a secretariat for administrative support and day-to-day operation of the Fund, including setting up and maintaining the web portal for online applications, vetting of application submissions, disbursing funding, conducting spot checks for funded items, preparing promotional materials and organising publicity events. The governance structure of the Fund is at **Annex A**.

## **FUNDING PARAMETERS**

5. The Fund has been open for applications since October 2018 and covers the following areas -

- (a) Technology Adoption:
  - (i) Building Information Modelling (BIM);
  - (ii) Modular Integrated Construction (MiC);
  - (iii) Advanced Construction Technologies (ACT);
  - (iv) Prefabricated Steel Reinforcing Bars (rebars); and
  
- (b) Manpower Development.

6. On technology adoption, eligible applicants include contractors<sup>1</sup>, subcontractors<sup>2</sup>, consultants<sup>3</sup>, and suppliers of equipment and material in the construction process as approved by the Steering Committee on a case-by-case basis. As regards manpower development, the Fund supports local higher educational institutions, professional institutions, trade associations and unions to organise various kinds of technology training for the industry as well as supporting tertiary students and existing practitioners to undergo construction technology related training outside Hong Kong.

7. Funding applications are considered by the respective VSCs having regard to the announced criteria of the Fund, namely boosting productivity, uplifting build quality, improving site safety and enhancing environmental performance. Funds were administered following the principles:

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<sup>1</sup> Contractors who have paid levy under the Construction Industry Council Ordinance (Cap. 587) in the past 24 months at the time of application are eligible.

<sup>2</sup> Subcontractors registered with the CIC under its Registered Specialist Trade Contractors Scheme (previously named Subcontractor Registration Scheme) are eligible.

<sup>3</sup> Consultants on the lists maintained by government and professional bodies are eligible.

- (a) Co-funding to ensure users' commitments while allowing flexibility of setting specific co-funding ratio having regard to the nature and cost of individual technologies; and
- (b) Re-imburement based – successful applicants are required to provide supporting documents as proof of expenditure to facilitate disbursement. The reimbursement arrangement, together with the other control measures such as surprise on-site checks, will help ensure that the funding granted is used for applying technologies in construction projects for encouraging adoption.

8. Since the launch of the Fund, we have introduced enhancements to the Fund having regard to the feedback of the stakeholders continuously to better address the needs of the industry.

## **IMPLEMENTATION PROGRESS**

### **Overall Progress and Performance**

9. Up to end May 2021, the Fund has received 2 472 applications, of which 1 845 have been approved involving a total funding grant of about \$436 million. This represents financial support for about 720 enterprises in adopting various types of technologies in local construction projects. Separately, the Fund has subsidised about 10 000 training places for practitioners in the industry and students of construction-related disciplines to attend technology-related training. Statistical breakdown of the number of applications received and approved by types are in **Annex B**.

### ***Adoption of Technology***

10. The Fund has funded technology adoption among key players of the construction industry, benefitting 145 contractors, 434 subcontractors and 142 consultants. Among the some 700 beneficiaries in technology adoption, about 400 of them are small-and-medium-enterprises (SMEs)<sup>4</sup>.

11. Among the approved applications for technology adoption, it is observed that more than half are on the use of technologies which were identified in 2018 as key drivers for technology adoption in the construction industry, viz. BIM, MiC and rebars. With the provision of financial support for procuring the related software, hardware and related manpower training, we note a notable

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<sup>4</sup> SMEs refer to enterprises engaged in manufacturing businesses employing fewer than 100 persons in Hong Kong, or enterprises engaged in non-manufacturing businesses employing fewer than 50 persons in Hong Kong.

increase in the number of construction projects using these technologies since the implementation of the Fund.

12. In addition to the technologies mentioned above, industry practitioners have also identified other proven technologies that are applicable to their operation via the bottom up approach and increased their adoption which is conducive to the sustained development of the industry. Examples of common technologies approved under the ACT include:

- (a) Automation and robotics e.g. robotic welders, automated sawing equipment, which enhances productivity and site safety;
- (b) Advanced construction materials which enhances build quality and environmental performance;
- (c) Augmented, virtual or mixed reality & Internet of Things technology which improves build quality and site safety;
- (d) Safety-related technologies including digital works supervision system, sensors and monitoring systems; and
- (e) Digitalisation and Common Data Environment platforms which uplifts build quality and facilitates sharing of resources.

13. The use of the above technologies, which involves main contractors, subcontractors, professionals, technicians and workers, has served to promote industry-wide interest in and awareness of the benefits of technological applications and modern construction methods.

14. In terms of the fund administration, we have simplified and streamlined the application process by drawing up lists of pre-approved BIM training courses, BIM software and ACT. Applications involving pre-approved items can be processed within 30 days. The Fund Secretariat has invited submissions from technology vendors and suppliers with a view to expanding the pre-approved lists from time to time to cover new suitable items. For applications related to items outside the respective pre-approved lists, the VSCs and the Fund Secretariat will normally complete the approval process within 60 days. We will continue to enrich the pre-approved lists to facilitate the uptake of technology and innovative construction method by the industry.

15. Experience sharing is key to innovation and boosting application. It is also an effective means to apprise smaller players in the industry of the technology options available to them. The CIC has created an online Innovation and Technology Platform (at <https://www.citf.cic.hk/>) to showcase the technologies on the pre-approved lists and encourage exchanges among the industry practitioners on the experience in and benefits of using them.

16. The progress of individual technology areas that are applicable under the Fund are summarised below.

(i) *BIM*

17. BIM is a leading technology to facilitate the multidisciplinary collaboration of construction professionals during the design, construction, and asset / facility management stages of engineering projects. Working in symphony with the Government's policy to mandate the use of BIM since 2018, the subsidy on BIM provided by the Fund has supported the industry to procure the necessary BIM hardware and software and to attend BIM training for industry practitioners to build up the capacity for adopting BIM.

18. Up to end May 2021, the Fund has approved over 1 000 applications in relation to the adoption of BIM (including BIM training discussed in paragraph 26 below). Among the some 500 eligible consultants in the industry, 133 have benefitted from the Fund. As an initial finding of our mid-term review (further elaboration set out in paragraphs 30-31 below), 85% of the enterprises with funding granted for BIM adoption and/or training have experienced an increase in the number of skilled staff in BIM, creating favourable conditions for the industry to move towards digitisation. We will continue to drive the adoption of BIM technology in both government and private construction projects, provide more training opportunities for industry practitioners, and extend BIM use to make the most of this technology in the whole life-cycle from planning, design, construction to the asset / facility management stage and for smart city planning.

(ii) *MiC*

19. MiC is a construction method whereby free-standing volumetric modules (with finishes, fixtures, fittings, etc.) are manufactured off-site and then transported for constructing buildings. Since announcement in the 2017 Policy Address, the Government has been promoting the adoption of MiC with a view to enhancing productivity and cost-effectiveness in the construction industry.

20. Since MiC is a new construction method in Hong Kong, financial assistance is essential for encouraging and supporting the consultants and

contractors to adopt MiC, in order to better reap its benefits for the whole construction industry. So far, the Fund has approved 37 applications involving a funding grant of over \$75 million to support consultants and contractors in implementing MiC projects.

21. Based on the findings of a recent study carried out by The University of Hong Kong, MiC would reduce construction time by 30% to 50%, uplift on-site productivity by 100% to 400% and save construction costs by about 10% comparing with traditional construction method. In addition, quality, sustainability and safety improvements are also noted. With the concerted efforts of the Government and the industry in promoting the adoption of MiC, there are now about 60 MiC projects in the pipeline, a notable increase from a handful of projects when the CITF was launched. We will continue to promote the use of MiC through various support measures including financial assistance under the CITF.

*(iii) ACT*

22. The Fund supports the adoption of a variety of technologies that can boost productivity, uplift build quality, improve site safety or enhance environmental performance. So far, 237 items are included in the ACT pre-approved list. Out of the 617 approved ACT applications, 535 involved pre-approved ACT items with a funding grant of \$149 million.

23. By encouraging the construction industry to adopt different types of ACT home-grown and developed elsewhere, the Fund has helped create demand and build up credentials for brand new local R&D solutions, which is an important form of support for technology start-ups. To incentivise the use of innovations and technologies developed domestically in Hong Kong, a higher matching ratio of 75% (versus the 70% matching ratio in general) is applied to home-grown inventions or locally developed products, e.g. local innovations supported by the Innovation and Technology Fund, products developed by local universities and tertiary institutions, etc.

*(iv) Prefabricated Steel Rebars*

24. The Fund supports the use of prefabricated steel rebars made by the approved rebar prefabrication yards<sup>5</sup>. 97 applications have been approved for using prefabricated steel rebars, involving a funding grant of \$75 million, i.e. a subsidy equivalent to some 249 000 tonnes of rebars. In the past two years, we have adjusted upward the level of subsidy from \$100/tonne to the current level of

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<sup>5</sup> The approved yards are those included in the “List of Approved Steel Reinforcing Bar Prefabrication Yards” of the Civil Engineering and Development Department.

\$300/tonne, and the per project ceiling from \$0.8 million to the current \$5 million to boost the use of prefabricated steel rebars, aiming to further promote productivity, quality, site safety and reducing wastage on site.

### ***Manpower Development***

25. Technology related training programmes in different forms have been supported under the Fund, ranging from local collaborative courses and international conferences to overseas enrichment courses and technical visits. Such programmes have benefitted construction personnel at various levels, including professionals, technicians and students. This has helped achieve the objective of the Fund to build up the capabilities of practitioners to harness technologies.

26. One of the key training area is BIM. The Fund has approved 463 applications from contractors, subcontractors and consultants for their staff to join different levels of BIM training. The total number of subsidised BIM related training places exceeds 7 200. As regards other major topics covered by the approved training programmes, they include digital transformation, artificial intelligence and robotics, augmented virtual reality enhanced BIM, etc. The total number of subsidised training places for these programmes is over 3 100.

27. The COVID-19 pandemic has disrupted the organisation of training programmes since early 2020. Most of the approved training events have been put on hold, or converted into online mode. Given the circumstances, we have accorded flexibility to successful applicants allowing them to adjust their training plans where necessary, and provided financial support for the cost of organising online training, e.g. the cost of setting up online platform. We will continue to promote the manpower development limb of the Fund so that more training programmes can be organised for continuous development of the industry.

### **Funding Control and Monitoring**

28. We have put in place a robust monitoring mechanism to ensure that public funds are properly used. Successful applicants are required to abide by a set of terms and conditions which set out in details the obligations of the successful applicants (e.g. submission of completion reports on the use of the funded technologies, submission of audited account), procedures to follow (e.g. procurement procedures of funded items), etc. The CIC will also conduct surprise spot checks to verify that the funded items, e.g. BIM software, ACT hardware and equipment, are being used properly on site. Successful applicants are also required not to transfer, sell or lease the funded items procured within the first

three years of its procurement. In addition, the Fund Secretariat will help cross check with other government funding schemes to avoid double subsidy for projects which will receive or have received subsidy from other funding schemes.

29. The Fund is subject to annual audit requirement. The CIC is required to submit audited financial statements showing the financial position of the Fund since its establishment to the Steering Committee annually, together with a true and fair view of the financial position of the Fund given by an independent auditor.

## **MID-TERM REVIEW**

30. To assess the effectiveness of the Fund in enhancing technology adoption in the construction industry and to identify any need for improvement, we are undertaking a mid-term review on the operation of the Fund. The review comprises, inter alia, an industry-wide survey and focus group meetings to collect feedback and suggestions from the industry. The views collected will form the basis for any necessary enhancements to the current funding arrangements.

31. We have completed the survey and the initial findings show that the Fund has received positive response from the industry. Over 80% of the respondents considered the Fund helpful to the industry. Among the current beneficiaries, 60% of the respondents agreed that the Fund encouraged companies to consider adopting innovation and technology, and over 70% of the respondents considered that the Fund had eased their financial burden in procuring advanced software, hardware or equipment. We are now analyzing the input received in detail and identifying areas for further improvement, with a view to better supporting the industry for promoting innovation and technology adoption. Recommendations will be put to the Steering Committee for consideration in due course.

## **ADVICE SOUGHT**

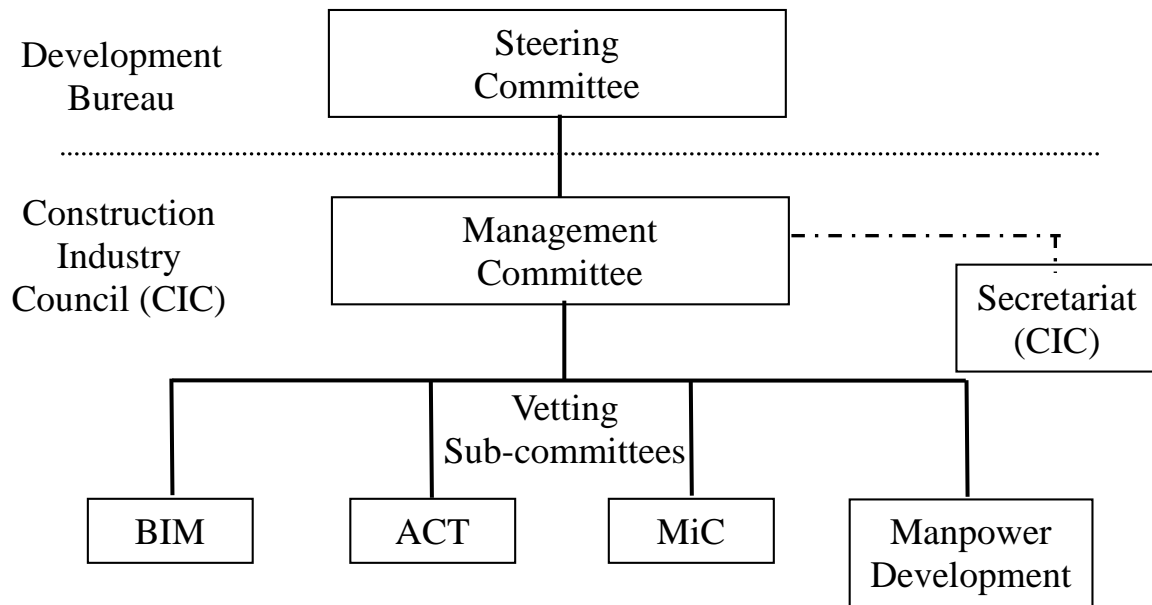
32. Members are invited to note and give views on the implementation progress and operation of the Fund.

**Works Branch  
Development Bureau  
June 2021**



## Construction Innovation and Technology Fund

### Governance Structure



- Legend :
- BIM Building Information Modelling
  - ACT Advanced Construction Technologies
  - MiC Modular Integrated Construction

**Construction Innovation and Technology Fund****Application Statistics as of 31 May 2021**

<b>Category</b>	<b>Application Number</b>	<b>Approved Number</b>	<b>Grant Amount (HK\$ million)</b>
BIM training	572	463	19.48
BIM adoption	729	598	70.30
Advanced Construction Technology	902	617	181.00
Modular Integrated Construction	101	37	75.29
Prefabricated Steel Bar	110	97	74.61
Manpower Development	58	33	15.43
<b>Total</b>	<b>2,472</b>	<b>1,845</b>	<b>436.11</b>

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