MEDIA FACTSHEET

2ND CONSTRUCTION PRODUCTIVITY ROADMAP

Introduction

1. The 1st and 2nd Construction Productivity Roadmaps aims to ***raise the productivity of the construction sector by an average of 2 – 3% per annum over the period from 2010 to 2020***. The vision is to build a highly integrated and technologically advanced construction sector led by progressive firms and supported by a skilled and competent workforce.

Progress of the Sector

2. Since embarking on the first construction productivity roadmap in 2011, we have observed positive signs that our efforts are gaining traction.

a) ***Annual site productivity[1] has improved from 0.3% in 2010 to about 2% each in 2014 to 2016.***

b) As of end 2016, ***around $450 million out of a total of about $800 million of BCA's Construction Productivity and Capability Fund (CPCF) has been committed, benefitting more than 9,000 firms*** in technology adoption, skills development and better integration across the value chain. ***Around 90% of these companies are small and medium-sized firms***.

2nd Construction Productivity Roadmap

3. The 2nd Construction Productivity Roadmap aims to drive the sector towards achieving more aggressive productivity gains till 2020. This would require a strong productivity mindset among key stakeholders in the entire value chain to design and construct buildings with less manpower. A total of $450 million has been set aside from June 2015 to May 2018 for the 2nd tranche of the CPCF to support the initiatives under the 2nd Roadmap.

4. The following 3 focus areas have been identified under the 2nd Roadmap:

(A) Higher quality workforce

5. The desired workforce profile for the built environment sector is one that consists of a stronger pool of PMETs to lead the advancement of the sector, and a bigger pool of higher skilled (R1) workers among the work permit holders (WPHs) to anchor the workforce by 2020. ***Currently, nearly 40% of construction workers are at the R1 level, a significant improvement from 20% in 2014 and only about 2% in 2011***.

[1] Site productivity is measured by amount of floor area (m^2) completed per man-day.

6. The 2nd Roadmap focuses on raising the quality of the workforce through:

a) Requiring minimum proportion of R1 workers. From 1 Jan 2017, construction firms are required to have at least 10% of R1 workers. ***BCA will be consulting the industry to review the minimum R1 requirement at the firm level.***

b) Introducing multiple pathways for upgrading Basic Skilled (R2) workers to Higher Skilled (R1) workers.

c) Granting lower foreign worker levy rates for Higher Skilled (R1) workers.

d) Co-funding the upgrading of workforce at both PMET and worker level.

e) Equipping students and industry practitioners with future skills.

(B) Higher capital investment

7. To achieve a quantum leap in productivity improvement, we need to ***move towards widespread adoption of prefabrication technologies using the concept of Design for Manufacturing and Assembly (DfMA)***. This means designing for labour-efficient construction, with as much construction works done off-site as possible.

8. The following measures will help move the industry towards higher DfMA adoption:

a) Levelling up standards for both public and private sector projects through legislative requirements such as greater ***industry-wide standardisation*** (e.g. floor-to-floor heights) and ***wider use of productive technologies and prefabricated components*** (e.g. drywall as internal walls for non-wet areas in residential non-landed developments).

b) Public sector taking the lead in DfMA adoption.

i) ***Raised the weightage of the productivity component in public sector procurement evaluation*** (20% for consultancy services and 10% for construction services)

ii) ***Set up a Productivity Gateway Framework*** which provides a structured framework for public sector agencies to formulate and implement their own productivity roadmaps to achieve the national productivity targets.

iii) **[NEW]** Funding the cost premium for adopting game-changing technologies in public sector projects through the ***S$150 mil Public Sector Construction Productivity Fund (PSCPF)*.**

c) Driving DfMA adoption for private sector projects by imposing conditions on the ***adoption of productive technologies under the Government Land Sales (GLS) and industrial GLS (iGLS) programmes***. We are ***looking to specify productivity outcomes for a GLS site without mandating specific technologies*** to allow developers flexibility in proposing the most suitable productive technologies to adopt.

d) ***Co-funding the adoption of productive technologies*** through greater funding support under the CPCF, to drive wider adoption of DfMA as well as greater on-site productivity improvement.

e) Encouraging continual innovation by the industry with the setting up the ***Building Innovation Panel (BIP)***, a high level inter-agency group co-chaired by MND and BCA, to facilitate expedient multiple agency evaluation and approval of innovative construction methods, processes and materials that will improve construction productivity. MND/BCA have also completed a comprehensive ***construction research & development (R&D) road-mapping exercise*,** where 35 key technologies under seven R&D clusters were identified to enable the built environment sector to change the way we build and sustain productivity improvements in the long term.

f) ***Build supply capacity through setting up local DfMA facilities*** and providing supply side incentives for local DfMA facilities. We have set aside land for the development of Integrated Construction and Prefabrication Hubs (ICPHs) to support local DfMA production. **[NEW]** We will also be ***extending the Land Intensification Allowance (LIA) scheme to provide tax relief on capital expenditure incurred in the construction of ICPHs***.

(C) Better integrated construction value chain

9. We need to enhance the collaboration among the various stakeholders through Virtual Design and Construction (VDC). The VDC process helps integrate design, prefabrication and construction, to identify upstream design clashes and simulate downstream construction workflow. It allows construction to occur first in the virtual environment, almost like a full-dress rehearsal, before the actual on-site construction.

10. The use of Building Information Modelling (BIM) technology is integral to the VDC process, to surface problems and clashes before actual construction begins. BIM also supports the integrated DfMA approach where the digital model is used to drive production planning and automation. To reap the full potential of BIM, all the parties across the value chain need to leverage BIM technology. BCA is supporting this by:

a) ***Providing funding under the CPCF for projects that adopt VDC and BIM collaboration*.**

b) ***Running a suite of training programmes through the BCA Academy*** for senior, middle management and also technicians to equip the industry with the necessary knowledge and skills in the area of VDC and BIM.

c) ***Opened a Centre for Lean & Virtual Construction (CLVC) at the BCA Academy***. It is a first-of-its-kind immersive and experiential facility for BIM, VDC and lean construction, to enhance communication and collaboration between all stakeholders in a project to improve productivity. GPEs, industry firms and Institutes of Higher Learning (IHLs) are encouraged to utilise the Centre for training and experiential learning purposes. As of December 2016, close to 1,700 visitors have visited the CLVC.

d) **[NEW]** ***Introducing e-Plan checking using BIM*.** To standardise BIM modelling conventions to facilitate data exchange between various project stakeholders, BCA will be implementing phased voluntary and mandatory submission and processing of building documentation in the Native BIM format for regulatory compliance, based on the Code of Practice for BIM e-Submission, launched in Oct 2016. We will also lead the development of automated model checking for BIM e-Submissions.