

# Awaiting the construction revolution

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FOR 20 years, productivity in the global construction industry has grown at an annual rate of just 1%. Now, the industry needs to enter the twenty-first century, so that it can meet increasing demand for new structures and address the world's growing housing and infrastructure gaps.

The construction industry's glacial pace of change is unlike that of other sectors such as agriculture and manufacturing, which have transformed their productivity performance over time. Between 1947 and 2010, US manufacturing achieved 760% cumulative real (inflation-adjusted) productivity growth, compared to just 6% for construction.

Although the construction industry has long recognised its weaknesses, it has yet to muster the will to do anything about them. But, given the pressing housing and infrastructure shortfalls around the world, this is no longer sustainable. Urbanisation may be levelling off in many advanced economies, but it will continue in emerging countries. The world's 20 largest cities, 75% of which are in Asia, will need an estimated 36

million new housing units by 2025.

Moreover, in 2014, an estimated 330 million urban households lived in substandard housing, or struggled financially due to housing costs; that number is projected to rise to 440 million by 2025. Even in an advanced economy such as the US, over 40% of California's population cannot afford decent housing at market rates.

The growing demand for structures presents a huge opportunity to reshape the construction sector and create value through concerted action. According to research from the McKinsey Global Institute, the industry could boost its labour productivity by up to 60% if changes are made in seven key areas: regulation; design processes; contracts; procurement and supply-chain management; on-site execution; advanced automation, new technologies, and materials; and skills.

A 60% increase in productivity would create an additional US\$1.6 trillion (RM6.88 trillion) in annual output — roughly the equivalent of the Canadian economy — and add 2% to global gross domestic product. These gains, more than a third of which can be realised in the US alone, would be enough to

meet half the world's current infrastructure needs.

Managing a construction project is rarely simple. Success requires coordination and an end-to-end project operating system, so that everyone on a project understand their role and agree on key performance indicators.

At the same time, the parts of the industry with repeatable elements — particularly large-scale affordable housing — could negate many of the root causes of low productivity by shifting toward a manufacturing-style system of mass production. This would entail more standardisation, modularisation, and prefabrication.

In such a system, most structures would actually be built in factories. Instead of having different trades and subsectors jostling for room on construction sites, the bulk of the work would be carried out off-site, in a controlled environment.

Some residential homebuilders are already implementing this approach. For example, a Spanish company that builds replicable four-storey multifamily buildings can construct 5 to 10 times more units than it could with traditional construction methods, but employ the same amount of labour. Sim-

ilarly, a Canadian homebuilder offers a fixed number of repeatable designs with several customisation options, and lists the costs and specifications of each clearly on its website.

But if the construction industry now has a chance to reinvent itself after decades of tepid productivity growth, economic incentives will have to be realigned. For example, in the case of contractors, there is a clear link between productivity and profitability, but it is not as strong as it could be. Unless owners change their expectations, many contractors could lose revenue by moving to a more efficient, larger-scale system with fewer redundancies.

Owners, for their part, usually do not operate on a large enough scale to change industry dynamics single-handedly. And because they are reluctant to take on more risk, or change their requirements without knowing the final benefits of doing so, deadlock sets in.

Still, growth in demand for new construction may mean that the industry is about to start moving. Policymakers are starting to look seriously at cost and scale issues. These include affordable-housing crises; tight public budgets that make it necessary to squeeze more

out of every dollar in infrastructure projects; and lower oil prices putting pressure on capital costs in the hydrocarbons sector.

Within the industry, aggressive large firms, including many from China, are now flexing their muscles on the global stage. They have the capital to invest in efficiency-enhancing approaches and new production systems, and they are making use of increasingly accessible technologies — such as digital tools, advanced robotics, or new materials — to turbo-charge efficiency.

Many industry leaders are finally recognising the need to change, and expressing a willingness to do so. They know that if they do not prepare for the coming industry-wide disruption by rethinking their operations, they could be left behind in what may turn out to be the world's next great productivity story. — *Project Syndicate*

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