

## THEME PAPER

# PRODUCTIVITY IMPROVEMENTS IN THE MALAYSIAN CONSTRUCTION INDUSTRY

### 1.0 EXECUTIVE SUMMARY

The Construction Sector continues to be an essential sector in the Malaysian economy, where it lends strength and capability to a host of economic sectors, whilst supporting the social development of the country through the provision of basic infrastructure.

Various influencing factors, however, have together presented sizeable challenges to the Malaysian Construction Industry's especially in the enhancement of productivity. In order to address these challenges and the needs of the industry, the Construction Industry Master Plan (CIMP) 2006 – 2015 has been developed as a means for charting the future direction of the industry, thus ensuring that it will have the capacity to become a world-class, innovative and knowledgeable global solution.

Outlined within the CIMP are strategic action plans that will develop the Malaysian construction industry productivity through the following decade (2006 – 2015). The strategic action plans take cognisance of the current government of Malaysia's economic development policies.

The CIMP has been developed by the Construction Industry Development Board (CIDB) Malaysia in collaboration with the Industry President Council and the various organizations representing the construction industry.

### 2.0 PRODUCTIVITY TRENDS IN THE MALAYSIAN CONSTRUCTION SECTOR [2007]

Malaysia has continued to witness an upward trend in the performance of its economy with a GDP growth of 6.3% in 2007, the highest growth rate registered in the last three years. In tandem with this positive scenario, a broad-based productivity growth of 4.2% to a productivity level of RM 48,133 in 2007 (2006 : RM 46,208) was achieved against the backdrop of positive growth in all the other economic sectors.

The Malaysian Construction Sector, on the other hand, had registered the strongest productivity growth at 1.5% since 2004, on account of the implementation of projects under the Ninth Malaysia Plan (9MP).

In terms of 'added value per employee', the Construction Sector registered a growth of 2.3% in 2007, while its total output per employee grew at 3.8%, the result of the ongoing implementation of

major infrastructure projects that contributed to the growth in productivity.

In the light of sustained labour cost competitiveness, the Sector reflected a lower unit labour cost of 2.3%. Commensurate with the higher productivity growth of 1.5% as indicated earlier, a 1.3% growth in the Sector's enhanced labor cost competitiveness [reflected as labour cost per employee] was also achieved.

Given the modernisation of the Sector through the purchase of new equipment for infrastructure projects to be implemented during the 9MP, capital productivity showed a marginal decline by 0.03%, while capacity intensity registered a 2.6% growth.

Table 1 : Productivity Indicators for the Construction Sector

	Growth 2006 (%)	Growth 2007 (%)
Added Value per Employee	0.42	2.34
Total Output per Employee	0.61	3.76
Added Value per Labour Cost	0.99	1.26
Labour Cost per Employee	0.30	1.33
Unit Labour Cost	-0.97	-2.32
Added Value per Fixed Assets	-0.28	-0.03
Fixed Asset per Employee	1.94	2.64

Note : Added value measures the wealth created through production and services processes and it is distributed to those who have contributed to its creation.

Source : Malaysia Productivity Corporation (MPC)

### **3.0 PRODUCTIVITY-RELATED CHALLENGES FACED BY THE MALAYSIAN CONSTRUCTION INDUSTRY**

Much like many other countries around the world, the Malaysian Construction Industry continues to face a myriad of problems that threaten to impair its development and hamper its sustainability if not addressed and managed effectively.

The Construction Sector will continue to play its role as an important element in the national economy, through the strengthening and enabling of the other sectors, while supporting social development and meeting the needs of basic infrastructure requirements. There are a few influential factors, in particular, productivity and quality-related factors that have posed significant challenges to the development of the Construction Industry.

## **Fragmentation and Disintegration of the Construction Industry**

The construction industry has remained a very fragmented industry where different activities in the entire value chain of the construction processes are being undertaken by different parties, often undertaken in isolation, thus resulting in inefficiencies. In particular, the segregation of design and construction activities which is widely practiced does not encourage consideration for factors like savings in labour utilisation, ease of maintenance, construction safety and the practicality of construction methods.

As a result of the lack of such integration considerations in the industry, traditional construction processes tend to incur additional costs from rework that normally arise from quality issues, disputes and longer buildings times. It is obvious that such a scenario does not promote efficiency and high standards of quality in construction works.

## **Labour-Intensive Construction Methods**

Labour-intensive conventional methods of construction that are still prevalent in Malaysia. The adoption of such methods are encouraged by the cheaper cost of employment of foreign workers with lower wages and the availability of such workers for short-term periods of work.. Another reason for the heavy dependency on foreign labour involves the fact that the local workforce is reluctant to be employed as construction workers in the wet trades, where the image of the construction industry has always been one that is 'Dirty, Dangerous and Difficult'. In addition to these issues, these foreign workers, most of whom are from Indonesia and the Association of Southeast Asian Nations (ASEAN) are unskilled and this situation has had a further impact on the productivity and quality of the construction industry.

Besides labour issues, there is the low adoption of industrialised building systems that allow site fabricated components to be installed for construction projects, hence reducing dependency on foreign workers.

## **Industry Image**

The industry's image has always been in need of significant improvements and has been further tarnished by a small number of non-performing contractors. The appreciation for the need to enhance the image and professionalism of the industry is in line with the National Integrity Plan (NIP) which was launched by the Government on 23 April 2004.

Besides issues related to the image of the industry, payment issues in the construction industry have also become prevalent, where occurrences of non-payment, slow payment and under payment continue to rise. This is a growing concern as it often leads cash flow problems experienced by construction companies, which ultimately will impact construction quality and productivity. The

resolution of non-payment issues in the construction industry needs to be expedited in order to reduce financial difficulties to those involved.

Some developed countries, such as the United Kingdom, Australia, New Zealand and more recently Singapore, have decided to enact statutory provisions for adjudication to avoid such payment issues. Overall, the popularity of adjudication has gained tremendous support from key stakeholders in the construction industry. Parties concerned have benefited from the strict time limits, which have resulted in prompt decisions and reduced costs. Arbitration, by contrast, is often considered, within the domestic area, as slow, cumbersome and expensive and the number of institutional appointments have decreased markedly.

### **Difficulty in Securing Timely and Adequate Financing**

At the present moment, there is still a mismatch of needs and wants between the financial services and construction sectors. The percentage of loans disbursed to the construction sector is one of the lowest compared to other sectors such as manufacturing. Industry participants believe that construction remains a misunderstood industry and hence, is still being deemed risky by financial institutions. The ability to obtain funding, however, is a critical component to the success of the contractors, even more so when they intend to bid for and operate overseas projects.

In particular, contractors have been facing long-drawn problems in acquiring funding and financial guarantees for tender bonds, performance bonds, bridging loans and working capital, whilst being imposed with high insurance charges. Additionally, Contractors who are keen on project proposals as total-solution providers for overseas projects, are often plagued with problems of financing feasibility studies that need huge financial investments.

Other problems related to project expenses, especially tender bonds, performance bonds, bridging loans and working capital include the following:

- i. In general, local banks are less prepared to fund construction projects, especially overseas projects where such projects are categorized as high risk ventures which demand a lot of considerations due to potential negative impact and complexities such as political risks, national risks, payment risks, project management risks and others;
- ii. As a result of the problems highlighted in Item (i) above, local banks have been imposing strict conditions for funding. At times, contractors have been requested to deposit or offer collaterals that are of equal value to the loan amount;
- iii. The evaluation and approval process of banks have been known to be lengthy. Such situations have manifested themselves as significant hindrances to

contractors in their efforts to participate in tenders since the deadlines for such tenders are often tight, thus resulting in the failure of contractors to secure tender bonds.

The smooth implementation of projects have also been marred by the delay in getting approvals for bridging loans. Without working capital, it would be close to impossible for contractors to start work; and

- iv. Charges incurred by banks are often high. This is mainly due to the fact that local banks do not have branches in the countries or locations where the construction project will be undertaken. Contractors are then forced to bear charges twice, ie. charges imposed by local banks and those imposed by banks overseas which include the expenses of correspondence relationship with the local bank involved in the project.

### **Occupational Safety and Health**

Over the past five years, the lacklustre performance of the construction sector coupled with the rise in the number of fatalities within the sector has received considerable attention. The number of fatalities has reached an alarming level. The provision number of reported accident in 2007 was 3,395 of which 2.8% and 0.3% resulted in death and permanent disabilities respectively in construction industry. In comparison, the manufacturing industry and the agricultural, forestry and fisheries industry recorded 1.6% and 0.9% fatalities respectively.

Accidents that occur at the construction site hamper productivity when construction projects are served with 'stop work orders' from the authorities. Besides this, such accidents contribute to the tarnished image of the construction industry as being 'Dirty, Dangerous and Difficult'.

### **Lack of R&D for Innovation and Automation**

As mentioned, the local construction industry is characterised as one that is labour-intensive, which has resulted in numerous challenges as highlighted previously. There is a need for the construction industry to progress towards one that is more focused on innovation and automation. However, the pace of innovation through R&D and automation through the adoption of new construction methods are relatively low due to the abundance of cheap foreign labour.

Despite the lack of R&D initiatives in the Malaysian construction industry, there has been progress on the local front to encourage and stimulate R&D activities in the construction industry. For example, in 2007 CIDB established the CIDB's Construction Industry Research Institute of Malaysia (CREAM) and since then CREAM has funded 30 research projects to the tune of RM 19.37 million.

## **Addressing the Challenges**

To address the challenges and fulfill the needs of the industry, the development of a strategic plan has lent itself as a key initiative to determine the direction of the future of the construction industry, especially in the areas of the ability to compete in the global market, capabilities as global solution providers, innovative, knowledgeable and moreover, increasing the levels of productivity and quality. To continuously enhance the level of productivity and quality, the development of a Construction Industry Master Plan (CIMP) has become an imperative.

### **4.0 CONSTRUCTION INDUSTRY MASTER PLAN (CIMP) 2006 – 2015**

#### **About CIMP**

The Construction Industry Master Plan [CIMP] was officiated by YB. Dato' Sri Mohd. Najib Tun Abdul Razak, Deputy Prime Minister of Malaysia on 10 December 2007. The CIMP was developed in conjunction with other long-term plans such as the Industry Master Plan (IMP3), Vision 2020, National Integrity Plan (NIP), The 5 Years Malaysia Plan, Outline Prospective Plan (OPP3) and other plan and policies which outlines the objectives and strategies of the government to more competitive and sustainable and to increase the quality of life of the people.

CIDB, in collaboration with industry stakeholders through joint efforts, have developed a CIMP that is designed to help the Malaysian Construction Industry to face the challenges that lie ahead. In particular, the CIMP is aimed at transforming the construction industry in Malaysia to higher levels in terms of productivity, image, performance, capacity to become a world-class, innovative, knowledgeable human capital and efficiency. The master plan is a 10-year road map, covering the period of 2006 – 2015.

Some key considerations in the CIMP include the fact that the construction industry and the private sector have always assumed an important role in generating wealth and improving the quality of life for Malaysians through the translation of the government's socio-economic policies into social and economic infrastructure building. The construction industry also creates a multiplier effects to other industries, including manufacturing, financial, services and professional services.

Construction industry involves multiple stakeholders at different stages that could position them to leverage construction industry opportunities such as building and construction materials, tooling, heavy equipment and machinery and financial services.

A vision for the construction industry has also been formulated in tandem with the objectives and goals of Malaysia in the light of its aspiration to be developed nation by 2020. The vision is set out as follows : 'The Malaysian construction industry shall be a world-class, innovate and knowledgeable global solution provider'.

The mission of the CIMP can be translated into an ambition to support and coordinate all the initiatives that will lead to realization on vision for the construction industry. The mission is set out as follows : ' To be a dynamic, productive and resilient enabling sector, supporting sustainable wealth generation and value creation, driven by a technologically-pervasive, creative and cohesive construction community'.

### **Structure of CIMP**

The CIMP has identified eight (8) critical success factor (productivity, quality, human resource, knowledge, innovation, environment-friendly practices, industry sustainability and professionalism) which are imperative to the success of the achievement of the strategic thrust and strategies and ultimately to the vision of the Construction Industry.

In order to achieve the vision and mission, seven (7) strategic thrusts have been identified and which were subsequently formed the basis for the CIMP's main recommendations. The seven (7) strategic thrusts are :

- i. Integrate the construction industry value chain to enhance productivity and efficiency;
- ii. Strengthen the construction industry image;
- iii. Strive for the highest standard of quality, occupational safety and health and environment practices;
- iv. Develop human resource capabilities and capacities in the construction industry;
- v. Innovate through research and develop and adopt new construction methods;
- vi. Leverage on information and communication technology (ICT) in the construction industry; and
- vii. Benefit from globalization including the export of construction products and services.

21 specific recommendations, 77 action plans and 384 activities have also been developed and to be undertaken in order to achieve these Strategic Thrusts.

## **5.0 ENHANCING THE CONSTRUCTION INDUSTRY PRODUCTIVITY IN IMPLEMENTING THE STRATEGIC THRUSTS OF CONSTRUCTION INDUSTRY MASTER PLAN (CIMP)**

The CIMP has mapped out the action plans to address all issues arising and guided the construction industry to enhance the industry's productivity. Some of the action plans and strategies include:

### **5.1 Integrate the Construction Industry Value Chain**

#### **Encourage Partnering Approach**

Productivity in the construction industry will have to encompass more than the contractors alone. Architects and engineers will need to get involved, since there are three (3) contributing factors to productivity and quality failure: 10% due to material faults, 40% due to construction faults and 50% due to design faults).

The CIMP recommends a partnering approach by to be implemented by way of three (3) action plans which include creating awareness / educating, creating framework / guidelines mechanism of partnering and creating policy.

Partnering involves collaboration not just between the client and contractor, more importantly, along the entire construction industry value chain. Encouraging a collaboration attitude would bring construction players together to achieve shared goals and resources and to encourage free flow of communication. This would help to integrate the construction industry and bring about improvement in cost and quality control. It would also better enable the construction industry players to provide total solutions to their clients.

#### **Integrate Administrative Practice and Procedures**

The lack of coordination in the bureaucracy means that the entire approval processes often takes an excessively long period of time. Construction players have pointed out that it takes over 18 months to obtain approval for the building plans. This issue predominantly affects building rather than infrastructure projects, although they also facing similar delays with Local Authorities and Technical Agencies.

Under the CIMP, the key action steps that are being develop and reviewed, with an aim to be pursued in the context of integrating administrative practices and procedures are as follows :



- i. Standardise policies and procedures at all Local Authority through One-Stop Centre (OSC) initiatives;
- ii. Digitise planning submission and building plan approval process;
- iii. Introduce online submission for consultant; and
- iv. Develop standardized data exchange to digitally link with Technical Agencies.

## **5.2 Strengthen The Construction Industry Image**

### **Enhance the Professionalism of the Construction Industry**

There are various methods aimed at enhancing the image and professionalism of the industry. A key requisite for the industry is to be characterised by contractors who bring value to the industry.

There is need to tighten the registration of contractors and to introduce new registration requirement for contractors going overseas and those involved in facility management.

Professionalism can also be enhanced through adoption of a code of ethics (except for members of professional bodies) and adherence to these guidelines will be enforced by the associations. At present, there is no code of ethics for contractors. Continuous improvement efforts among contractors and professionals are also necessary for the industry to move forward. In encouraging contractors to improve their performance, a holistic performance assessment system that covers key areas – quality, occupational safety and health, environment, financial, etc. – needs to be in place. With all these efforts, the industry will be characterised by a higher level of professionalism and progress towards an image that is more trusted and respected by its stakeholders both locally and globally.

### **Resolve Non-payment Issues**

The resolution of non-payment issues in the construction industry needs to be speedy to reduce financial difficulties to those involved.

As such, the Construction Industry Payment and Adjudication Act (CIPPA) need to be enacted in Malaysia. This Act will incorporate the five (5) criteria for a successful dispute resolution mechanism. The key criteria are economical, contemporaneous, timely, networking (good relationships must be maintained) and contractually correct.

Currently, CIDB is working together with the industry to develop the Construction Industry Payment and Adjudication Act (CIPPA).

### **Other Initiatives to Strengthen Construction Industry Image**

Other initiatives would include a performance scorecard on Quality Assessment System in Construction (QLASSIC), enhancing the Procure to Pay (P2P) strategy and raising the knowledge level of the construction community. These initiatives, when implemented effectively, should lead to a change in its current image to one that is more attractive and reputable.

## **5.3 Strive For The Highest Standard Of Occupational Safety And Health**

### **Occupational Safety and Health Practices**

The long term development of the industry requires stakeholders to be accountable to achieve the highest standard of occupational safety and health practices to be upheld to ensure that a proper balance is achieved. The achievement of these standards requires raising the awareness of its importance among relevant stakeholders and the implementation of an Occupational Safety and Health Management System (OSHMS), developing occupational safety and health programme which include awareness, education and training, enforcement and legislation, guidelines and codes of practices.

## **5.4 Develop Human Resource Capabilities And Capacities**

### **Develop Human Resource Capabilities**

The construction industry in Malaysia can promote the use of skilled labour by adopting a five-stage approach to human resource development which encompass the assessment of human capital needs, development of training and education, and encouragement of Continuous Competency Development (CCD).

## **5.5 Innovate Through Research And Development**

### **Continuously Innovate Construction Processes and Techniques**

The overall focus on costs has an impact on adoption of technology in the construction industry. Cost and budget constrain have encourage the construction industry to favour labour-intensive construction methods over the use of more expensive technology. In turn, makes it more difficult for the industry to increase its level of productivity in quality in

the long run. The use of Industrialised Building System (IBS) is still not widespread in the industry. The main reasons for the low adoption of IBS in Malaysia are lack of integration at the design stage and poor knowledge of IBS. The industry had established IBS Road Map 2003 – 2010. The road map target is to achieve Open Building System and industrialization of Malaysia construction industry by 2010.

For the past few years, there is a definite upward trend in IBS usage which would help to ease the pressures of labour requirements and boost productivity and quality. Manufacturers of IBS products are registered with CIDB and evaluated via the IBS product registration form.

Until December 2007, as many as 119 IBS manufacturers and 326 IBS products have been registered with CIDB (Table 2). An estimated 1,933 contractors have registered with CIDB under IBS related specialization categories and 895 out of this group of contractors have remained active since (Table 3).

To continue and maximizing the usage of the IBS, the CIMP has been encouraging industry participants in the adoption of new techniques, technological methods suitable for Malaysia construction, development of manpower, development of components and machineries, enhancement of management processes and methods, provision of monetary (economic and financial) support for the adoption of IBS as well as the marketing and promotion of IBS.

Table 2 : List of IBS Product Manufacturers and IBS Products as at December 2007

No.	Description	Total No. of Manufacturers	Total No. of Products
1	PC Frames / Panel / Box Components	50	245
2	Steel Frames / Panel Components	29	45
3	Systems Formwork	24	29
4	Timber Frames	25	28
Jumlah Total		119	326

Source : Companies Commission of Malaysia

Table 3 : List of Contractors Registered with CIDB by IBS Specialisation, as at December 2007

Registration Grade	IBS-related Registered Specialisation				
	Prefabricated Buildings and Industrial Plant	Steel Framed Buildings and Industrial Plant	Aluminium / Metal and Glass Works	Roof Installation and Metal Cladding	Formwork System Specialisation
G7	5	11	44	10	1
G6	0	15	46	17	0
G5	7	66	90	39	2
G4	0	23	15	3	1
G3	1	55	16	13	2
G3	0	40	7	7	1
G1	15	306	14	19	4
Total	28	516	232	108	11

Notes : 1,933 registered contractors [895 active contractors] under IBS specialisation

Source : CIDB Malaysia

### **Stimulate R&D Activities**

Given the significance of R&D activities in the construction industry, the government, together with the academia (local and international) and industry players is recommended to collectively take the lead in pledging support for the introduction and continuation of a R&D vehicle to encourage and stimulate practical R&D activities through various resources-pooling initiatives. Some of the areas of focus in R&D activities that could be pursued are as follows :

- i. New construction methods and technology development;
- ii. Innovative occupational safety and health solutions;
- iii. Software applications; and
- iv. Building and construction material such as reusable building materials.

The CIMP also recommends that the industry stimulate research through CIDB's Construction Industry Research Institute of Malaysia (CREAM) in specific core themes within the construction industry. Through the annual workshops, dialogues and

questionnaire surveys, CREAM has identified priority areas of research and giving R&D grants to universities, government agencies and the private sectors to do the research. CREAM would also act as a facilitator between the industry, academia and the government in developing R&D culture.

Another essential consideration is the ability of the industry players involved to maintain control of the result of the R&D programmes so that they are the sole beneficiaries. Therefore, the task of identifying methods of protection is critical to the venture. As such, it is recommended that the government continuously review and revise the intellectual property rights (IPR) framework to strengthen IPR for R&D.

In addition, it is proposed that CIDB's Legal Department should work with relevant Ministries and Government agencies (e.g. the Ministry of Domestic Trade and Consumer Affairs) to develop a coherent framework of protection.

## **5.6 Leverage on Information and Communication Technology (ICT)**

### **Encourage Knowledge Sharing and Develop New Software**

The construction industry needs to have in place a mechanism that allows for and encourages knowledge sharing and develop local construction software industry among its diverse stakeholders.

The construction industry also needs a single point of access to all information relevant to the industry. Creating user-friendly construction knowledge and information portal for stake holders will enhance the construction productivity. The industry will also implement online planning submission and building plan approval, develop online tendering system, review Multimedia Super Corridor (MSC) incentives and infrastructures and develop software that could be relevant for the development of ICT in construction.

## **5.7 Benefit From Globalisation**

### **Promote and Facilitate Export Of Construction Products And Services**

Globalisation has created numerous opportunities as well as challenges for the local construction industry. Due to the slow down in the construction sector, some contractors have begun to tap into overseas markets, particularly India and the Middle East. A cohesive global marketing and brand building efforts will be required. The government will also play a more significant role in helping to secure overseas projects through its good bilateral relationship with South Asia (India and Sri Lanka) and as former chairman of the 57-member grouping of Islamic countries (i.e. The Organisation of the Islamic Conference

(OIC)). Locally, the government will play an important role in developing and maintaining social and economic infrastructure which, in turn, will ensure sustainability for the construction community.

The role of financial institutions, including the capital market, will be further enhanced to support the financial requirements of the contractors. Further, complementary industries (such as tooling, heavy equipment and machinery, building and construction materials and professionals and designers) will be developed to enable contractors to provide total solutions and deepen the value-added of foreign projects. Malaysian capabilities in the oil and gas sector and construction cranes would propel Malaysia to be a leading and respected player in the global construction market.

## **6.0 CIMP IMPLEMENTATION PLAN**

The implementation of the CIMP will be undertaken using a phased approach and covering the 10 year period from 2006 to 2015. This approach has been adopted to take into account the growth in capabilities the construction industry will experience throughout this implementation period.

Phase one of the implementation plan will cover the initial three-year period (2006 – 2008) and primarily seek to resolve the existing challenges of the construction industry that restraining the industry from realizing its full potential.

Phase two of the implementation will cover the second four-year period (2009 – 2012) with a focus on developing new capabilities and building a strong foundation for the industry to venture overseas. Acquiring this set of skills and abilities will prepare the construction industry to increase its presence and stature in the global arena.

Phase three of the implementation plan will cover the final three-year period (2013 – 2015) and address the industry needs in competing in a global environment.

## **7.0 CONCLUSION**

With the CIMP in place, it is envisaged that the Malaysian construction industry will be further developed in a more structured and holistic approach, to realize its full potential.

Having addressed its challenges and constraints, the Malaysian construction industry is poised to achieve greater efficiency and productivity and would have acquired new strengths and capabilities.

It will fulfill the industry's vision to be a world-class, innovation and knowledgeable global solution provider and would have established a secure footprint for the construction industry in the global construction marketplace.