

Singapore Government

PRESS RELEASE

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90-SP-4

Release No: 09/MAY
14-2/90/05/07

ADDRESS BY MR PETER SUNG, MINISTER OF STATE FOR FOREIGN AFFAIRS AND NATIONAL DEVELOPMENT OF SINGAPORE, AT THE ASEAN INTERNATIONAL SYMPOSIUM ON CONSTRUCTION AND DEVELOPMENT AT KUALA LUMPUR, MALAYSIA ON 7 MAY 1990 AT AT 11.45 AM

INTRODUCTION

It gives me great pleasure to address such a distinguished audience.

CONTRIBUTION OF THE CONSTRUCTION INDUSTRY

Mr Chairman, the construction sector is a key sector in the development of a country. In many Third World countries, the construction industry does not play this role well.

Because of the abundance of cheap labour, the temptation is to use labour-intensive methods of construction. Would the cost of construction be lower simply by using cheap labour?

We made a study of construction costs in Sweden, Denmark, the US and Australia. As you know, labour costs in these countries are very high. But our study showed that their construction costs are not much above those in Singapore. On detailed analysis, it became clear that the cost of construction is a function of many factors. These include:

- the level of architectural and engineering skills;
- the skill levels of the workers;
- labour productivity

- construction management;
- the level of material wastage;
- the use of equipment;
- the amount of standardization in designs;
- the level of development of the component industries including pre-fabricated components.

Project costs are also affected by the time taken to complete a project as this affects holding and opportunity costs. Labour-intensive methods do not help in this respect.

Third World countries must decide for themselves whether the main objective of the construction sector is to provide employment or to provide an engine for growth as well as to support the other sectors.

Mr Chairman, I would like, if I may, to describe what we have done to the construction industry in Singapore. My purpose is not to prescribe a model for others to follow but rather to show what can be done to upgrade the construction sector.

HELP FROM THE SINGAPORE GOVERNMENT

In 1984, the Government set up the Construction Industry Development Board (or CIDB) to upgrade and develop the construction industry. The CIDB played a pivotal role in guiding and helping the Singapore Contractors. It introduced a number of measures to which the contractors responded positively.

(a) Contractors Registry

The Contractors Registration System for public sector works was centralised. Previously Government agencies had their own registry. The registration criteria were raised for some items such as capitalisation and personnel requirements.

(b) Capitalisation

To be financially strong, the contractors have to increase their capitalisation. Ten years ago, it was rare for construction firms to have a paid-up capital of \$1 million. Today, we have 120 firms in this class. Nine are publicly listed. 23 have qualified for the highest financial category of registration which requires a capitalisation of \$5 million.

(c) Mechanisation

An important step was to mechanise. The CIDB introduced the Investment Allowance Scheme which provides a tax allowance of up to 50 per cent for mechanisation through investments in modern construction equipment and machinery. Since 1983, a total of \$136 million of investment have been approved under the Investment Allowance Scheme. While the level of mechanisation among the bigger construction companies was generally raised in the 1980s, the same cannot be said for the small and medium-size contractors. There are good reasons for this. Mechanisation requires heavy investment. It also requires a certain size of operation to take advantage of the economies of scale. The CIDB will continue to help small and medium-size contractors.

- * The CIDB will introduce construction equipment suitable for small-scale operations. Many operations, such as the lifting and handling of materials, need not be undertaken by unskilled workers even for small projects.
- * In August last year, the Investment Allowance Scheme was liberalised for the benefit of more contractors, especially the smaller ones. This

has resulted in an increase in the use of the scheme. In the six months since the scheme was liberalised, approved equipment investments under the Investment Allowance Scheme went up by four times compared with the previous six months.

The Scheme has been expanded to include equipment such as computers and project management software to enable contractors to improve their productivity.

(d) Workers

It is necessary for the construction industry to have trained workers and tradesmen. Since the Construction Industry Training Centre (CITC) was set up in 1984, some 7,360 have undergone full-time craftsmen training. Another 9,400 workers have completed part-time courses. The CITC is expanding its programmes to ensure that all tradesmen in the industry are fully certified by 1995. The National Construction Trade Testing Programme has seen an increase in candidates from 325 in 1984 to 3625 in 1989/1990.

(e) Management & Supervision

It is essential for contractors to improve their management and supervision capabilities. In 1987, a CIDB survey found that only about 40 per cent of the construction supervisors working for consultancy firms were properly trained. The CIDB immediately initiated the National Certificate in Construction Supervision (NCCS) Programme to train site supervisors. The programme also involves tests for supervisors who have the relevant site experience but lacked the formal training. Since the inception

of the course, 1,671 have enrolled for the programme. By the end of 1992 there will be over 2000 NCCS graduates in the industry. Together with the estimated 3,500 Polytechnic Diploma holders, the construction industry will, by then, have the services of more than 5,500 qualified supervisors. Construction companies have substantially increased the use of qualified personnel. A survey conducted last year by the CIDB showed that 59 per cent of key management staff and 53 per cent of site supervisors hold at least a diploma.

(f) Education

In 1982, the Government set up the Nanyang Technological Institute (NTI) to produce industry oriented engineers. NTI has since gained a reputation for quality graduates.

Last year, the NTI and CIDB set up a Centre for Advanced Construction Studies. From July this year, the Centre will conduct a Masters Course in International Construction Management.

(g) Construction Quality

In 1989 the Government developed and introduced a system for assessing construction quality. The system is referred to as CONQUAS, the acronym for Construction Quality Assessment System. CONQUAS measures the quality level achieved by determining the extent to which a statistical sample of different parts of a building conform to standards of workmanship and specification which were determined before-hand. For example, a tiled-finished wall is assessed on how well the wall is aligned, by how much adjacent tiles are displaced, and whether there is hollowness behind individual

tiles.

CONQUAS assesses both structural and finishing work. A CONQUAS score (maximum 100) is given for the building after the assessment. So far, more than 150 recently completed buildings have been scored. An average quality building will have a CONQUAS score of 60 to 65.

Developers and owners are beginning to look at a contractor's CONQUAS score record. Therefore, the use of such a system has resulted in better quality construction and finishes.

(h) Reward for Construction Quality

In January this year, the Government introduced the "Preferential Margin for Construction Quality" to raise the level of construction quality. Under this scheme, a Singapore contractor is eligible for preferential margin (called Premium) if the Average CONQUAS Score of his three most recent completed projects is at least 65. The firm will be given a premium of 0.2 per cent for every point it scores above 65. For example, if a firm gets an average CONQUAS score of 75, its preferential margin will be $(75-65) * 0.2 = 2.0$ per cent. The maximum preferential margin is five per cent.

When a contractor with a premium of, say, 2.0 per cent tenders for a building project and his price does not exceed the lowest tender by 2.0 per cent, he will be awarded the contract at his tender price - if the lowest tenderer does not have any preferential margin.

(i) Productivity

CIDB conducts regular studies with a view to

improving construction productivity. CIDB's studies show that :

- * Singapore labour productivity levels still need improvement. For example, a Singapore bricklayer can lay 500 bricks a day whereas an Australian bricklayer lays 680 bricks a day.

- * at a project level, there is greater loss of productivity through poor scheduling and management of workers. This arises mainly because labour wages are still relatively low compared to those in developed countries. There is much room for improvement in this area.

(j) IT Initiatives

A CIDB study in 1989 showed that computer literacy in the construction sector was higher than that of the manufacturing sector in Singapore. The construction industry can capitalise on information technology to enhance the productivity and quality of design and construction. The shortage of personnel and the increasing availability of computing power and sophisticated software should enable the construction industry to make a quantum leap in tapping the benefits of the information age.

(k) Automation

The CIDB intends to do more to assist the industry to increase its level of automation. It will launch a Construction Automation Programme (CAP) this year. The CAP is based on a three- pronged strategy.

- * Firstly, the Construction Automation Programme

will make it easier and less costly to automate. A Construction Automation Fund is being planned. CIDB will work jointly with Economic Development Board to promote automation incentive schemes to encourage contractors to automate their operations.

- * Secondly, the CIDB will initiate some automation development projects over the next three years. As of now, the CIDB has already embarked on three automation development projects jointly with the Singapore Contractors Association (SCA), the National University of Singapore (NUS) and automation consultants.

These are :

- the recently launched ROBOPILE 2000, an automated mini- piling machine;
 - a concrete finishing robot; and
 - an expert system for construction cost modelling.
- * Thirdly, the CIDB will develop, jointly with the industry, suitable training programmes to build up a pool of automation technicians. The technicians will be trained in safety, programming, operation and maintenance of automated systems.

(1) Preferential Margin

Using the infant industry argument, the Government introduced a Preferential Margin Scheme in 1981. This Scheme gave Singapore contractors a tendering advantage of up to five per cent for government projects to enable them to compete against foreign contractors who are financially and technically stronger. In 1984, this Scheme was extended to

joint ventures between Singapore and foreign contractors as a means to encourage technology transfer. This extension was instrumental in promoting many of the partnerships between Singapore and foreign contractors.

In 1987, the Preferential Margin Scheme was modified. Singapore contractors no longer enjoyed a five per cent margin in monetary terms. However, they were given the first option to price match the lowest bid offered by a foreign contractor, if their bid was within five per cent of the foreign contractor's bid.

The Preferential Margin Scheme was discontinued for building projects on 31 Dec 89. It was replaced by the Premium Scheme for Construction Quality with effect from 1 Jan 90.

For civil engineering projects, the Preferential Margin Scheme is still in use. It will continue to be applicable to civil engineering projects until CONQUAS is introduced to civil engineering projects or until conditions changed.

Why, you might ask, is the Singapore Government involved. To answer this question, I can do no better than to quote from Professor Michael E Porter of the Harvard Business School. In an article entitled "The Competitive Advantage of Nations", in the Harvard Business Review, March-April 1990, Professor Porter said:

"Companies achieve competitive advantage through acts of innovation. They approach innovation in its broadest sense, including both new technologies and new ways of doing things... Innovation can be manifested in a new product design, a new production process, a new marketing approach, or a new way of conducting training.

Much innovation is mundane and incremental, depending more on a cumulation of small insights and advances than on a single, major technological breakthrough. It often involves ideas that are not even 'new' - ideas that have been around, but never vigorously pursued. It always involves investments in skill and knowledge, as well as in physical assets and brand reputations.

"As the basis of competition has shifted more and more to the creation and assimilation of knowledge, the role of the nation has grown."

PRIVATE-PUBLIC SECTOR EFFORTS

Mr Chairman, I may have created the impression that the government was solely responsible for the development of the Singapore contractor. Indeed the government did play a vital part by introducing incentives and guidelines. I hasten to say that this is necessary but not sufficient. The Singapore contractors responded fully to the government's initiatives. The result is that they have grown in stature and have taken their rightful place in the construction industry in Singapore. They are now undertaking bigger and more complex projects, sometimes in joint venture with foreign companies. They have also achieved significant successes in overseas projects. For example, in the last three years, they have secured projects worth more than S\$1.7 billion in more than 20 countries.

The record in the last few years shows that success belongs to those diligent contractors who took advantage of the government's incentives. And greater success belongs to those with the entrepreneurial ability, business acumen, technical know-how and international marketing expertise.

COOPERATION AMONG ASEAN CONTRACTORS

Finally, I would like to pose a few questions:

- (a) Is there room for co-operation among the leading contractors in ASEAN?
- (b) Do they have skills which would be better utilised if they were to pool together?
- (c) Can the ASEAN governments jointly help them as we have helped ours?

I do not know the answer to these questions. In the course of your discussions, you may wish to explore the possibilities. I hope your deliberations during this symposium and your discussions inside and outside the formal programme will be fruitful and profitable.
