ISIS ISSUE PAPER

INDUSTRIAL R&D IN MALAYSIA: CHALLENGE AND RESPONSE

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INSTITUTE OF STRATEGIC AND INTERNATIONAL STUDIES
(ISIS) MALAYSIA

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ENR	Epoxidised natural rubber
GDP	Gross Domestic Product
GNP	Gross National Product
IMP	Industrial Master Plan
Mardi	Malaysian Agricultural Research and Development Institute
Mimos	Malaysian Institute of Microelectronics Systems
MIRDC	Metal Industry Research and Development Centre, Sirim
MITEC	Metal Industry Technology Centre, Sirim
NCSRD	National Council for Scientific Research and Development, Malaysia
PIDC	Patent Information and Documentation Centre, Sirim
Porim	Palm Oil Research Institute of Malaysia
PSD	Public Services Department, Malaysia
RRIM	Rubber Research Institute of Malaysia
Sirim	Standards and Industrial Research Institute of Malaysia
TAC	Technical Advisory Committee, Porim

Introduction

MALAYSIA is entering a new phase of industrialisation which will see emphasis placed on heavy industries, high-technology precision industries and resource-based industries. Prime Minister Datuk Seri Dr Mahathir Mohamad has said that by the mid-1990s, the country should be well on its way to becoming an industrialised nation[1]. In view of these, one of the questions that must be answered is: from where would the nation obtain the necessary technology?

Technological development in a country usually begins with the importation of advanced foreign technology. The process then goes through a phase where domestic variants are developed from this imported technology. Finally, the country reaches its goal of technological self-reliance. This does not imply that technological self-sufficiency should be the ultimate aim for the country. What is more important is a combining of local and foreign technological elements so that local technological capabilities and expertise might be developed. Thus, any strategy aimed at initiating this process must concentrate first on importing advanced technology and second, on adapting, improving and developing the imported as well as other existing technologies. At the same time, research and development (R&D) into innovative technology can and should be carried out.

There appears to be a strong case, based on the following arguments, for Malaysia to develop a local capacity for technology generation:

(i) It is becoming increasingly difficult and much more expensive to buy foreign technology. Technological protectionism is also on the rise. At the beginning of the 20th century, the United States was able to buy cheap technology from Europe. Similarly during the middle of this century, Japan and Korea were able to buy relatively cheap technology from Europe and the United States. Moreover the technologies of today become obsolete faster than earlier technologies. Thus when Japan and Korea began to industrialise and modernise they could develop their industries using one or two technologies. This is not possible today. We have to keep on upgrading our skills, knowledge and equipment if we do not wish to be left behind.

(ii) In some cases the imported technology may not suit the needs and requirements of the importing country.

The assessments and views expressed in this publication are entirely the author's own.

(iii) A local technological capability will reduce our dependence on other countries for technological aid and permit us to strike better bargains for imported technology.

(iv) Technological capability in any area could give us a comparative advantage in that area and even contribute significantly to export earnings.

(v) Local technology generation can also lead to the creation of a national capacity to cope with emerging technical and industrial problems. Moreover, any transfer of technology depends on the existence of a domestic capacity to change, modify and adapt the introduced technology in numerous ways. These technologies can be further improved to create new results. This process has been termed 'improvement engineering' and it was the strategy Japan used to achieve its exceptional successes in industrialisation and technological development.

This report is thus based on the premise that to succeed in industrialisation, a nation like Malaysia cannot rely solely on buying foreign technology. It must have an inherent capability to adapt and adopt existing technology as well as to develop new forms. This can be achieved through the development of an active programme of focussed industrial R&D; focussed at specific fields in which Malaysians have a greater chance of success. This is opposed to non-focussed industrial R&D in which the nation dabbles in all possible fields of interest leading to less concrete results.

It must also be borne in mind that an R&D capability is only one component of the whole system of technological development and modernisation. Technology transfer within the local industrial sector, the second component, is equally important. The third, and by no means any less important component, is the development of technically-competent and creative human resources. The last two aspects will be studied separately; this report will concentrate on providing policy recommendations for the creation and sustenance of a local industrial R&D capability.