

The Use of Science and Technology Indicators

The usage of Science and Technology Indicators (S&T Indicators) is now quite widespread. The primary purpose of these indicators, often used in conjunction with other economic indicators, is to guide the decision of S&T policy makers. Systematic and appropriate S&T Indicators provide the policy makers with an indication of the status of the national S&T system and the relationship between scientific and technological efforts and the economic growth.

In line with the increased importance of S&T in a nation's economic system, S&T Indicators have been developed to describe and map the national system of innovation, so that national competitive advantages can be identified and promoted. The OECD, North America, European Union, Nordic and Asian countries have constantly been using S&T Indicators as a measure of their scientific and technological development and simultaneously to measure their competitiveness.

S&T Indicators measure both inputs and outputs. Among the inputs indicators that are normally evaluated are financial and human resources devoted to Research and Development (R&D) activities. Information in this form is vital to assess the R&D efforts, and gauge whether the level of R&D is keeping pace with the growth of the economy and infrastructure. Human resources involved in S&T within a nation is also another important input in the S&T Indicators. It surveys the role of training institutions primarily institutes of higher learning (IHLs) in supplying the demand for the trained, educated and skilled people in all fields.

S&T outputs indicators on the other hand, attempt to relate between investments in S&T and their possible benefits to the country. Even though there could be other outputs from investments in R&D and human resources, but by international standard, statistics on patents applications/granted and data on bibliometrics (number

S&T publications produced and cited) are the two most recognised S&T indicators outputs. Patents would measure level of innovativeness and inventiveness while bibliometric indicators assess the level of S&T outputs of a country as well as providing an indication of the quality and capability of local scientists.

As Malaysia propels into the next millennium with the nation's aspiration to be a developed nation by the year 2020, it is of paramount importance for Malaysia to constantly assess its development and progress in S&T, to maintain its global competitiveness. With the appropriate use of S&T Indicators perhaps in a more systematic manner and in accordance with acceptable standards, Malaysia would be able to evaluate its S&T status, progress and trends from time to time and if need be, new S&T policies may be formulated and implemented in ensuring the desired future is achieved.

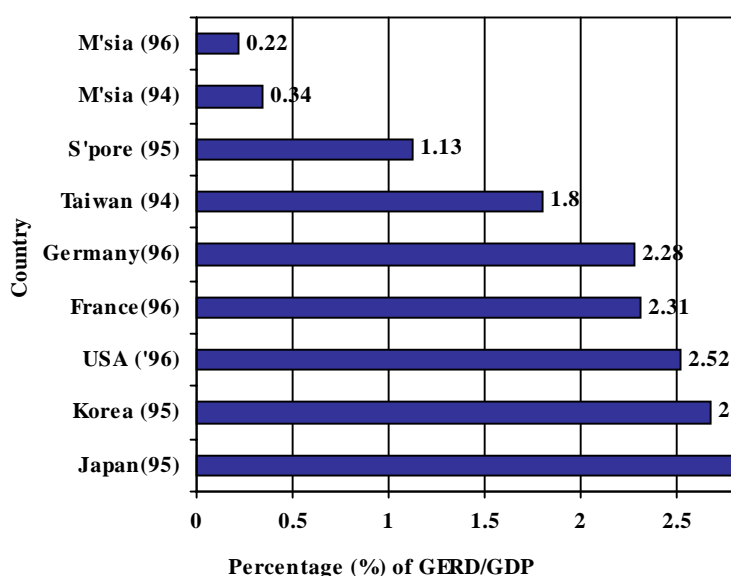
Highlights of 1996 Science & Technology Indicators Report

R&D Expenditure

Gross Domestic Expenditure on R&D (GERD) has not grown in tandem with economic growth. The GERD ratio to Gross Domestic Product (GDP) has

registered a declining trend from 0.34% in 1994 to only 0.22% in 1996. By international standard, the percentage was very low where on average the OECD countries have recorded a GERD/GDP ratio of 2%.

International Comparisons - GERD/GDP



R&D Workforce

R&D workforce have shown a significant increase from the years 1992 to 1994 but from 1994 to 1996 there has been a drop in total workforce, both in terms of headcount and Full Time Equivalent (FTE). This has resulted in the declining of the ratio of researchers per total workforce.

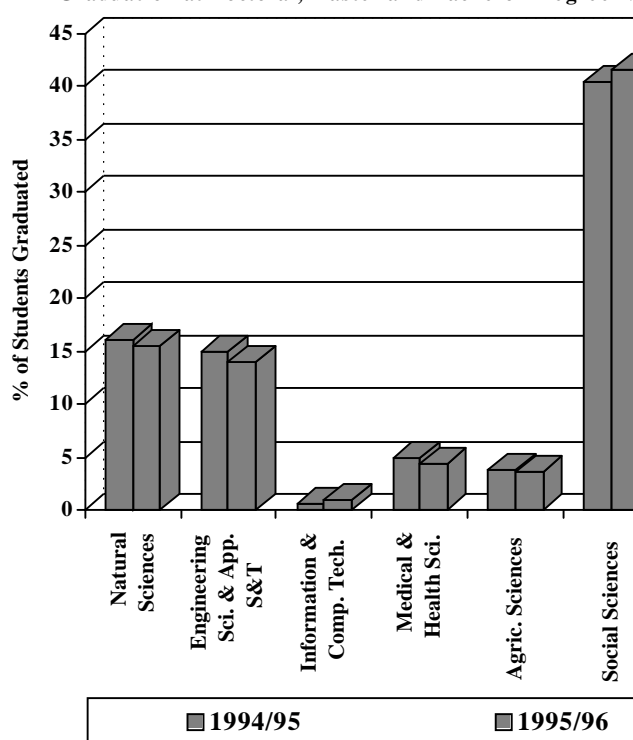
Patents

In terms of R&D outputs, although at national level the trend in patents granted is increasing, the auto-sufficiency ratio indicated that patents are still dominated by foreigners. In 1996, out of 1801 patents granted, only 79 patents or about 4% of them were approved to local residents while the rest were granted to non-residents.

Graduation at Doctoral, Masters and Degree Level Students

There has been an increase in the number of Bachelor, Master and Doctorate graduated from Public Universities from 14,708 in 1994/1995 to 17,135 graduates at the end of 1995/96 academic year. However, the total graduates in *Natural Science and Engineering* remained lower compared to *Social Science and Humanities* classification.

Graduation at Doctoral, Master and Bachelor Degree Level



Strengthening Ties

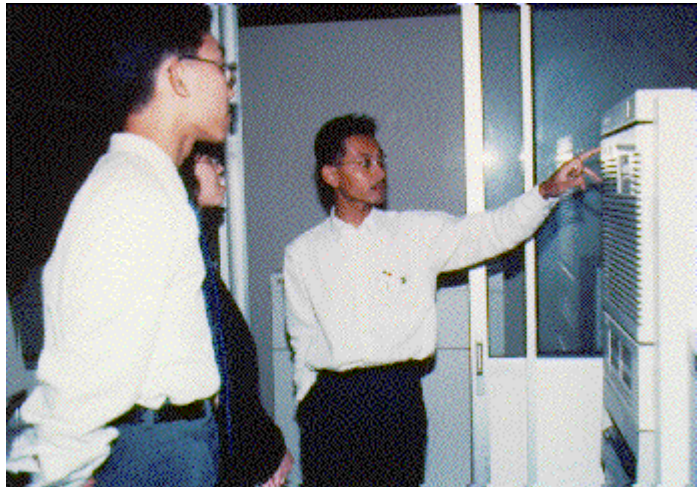


Ms Saonah Shairi welcoming Prof Mei Hwa Yang to MASTIC

During the visit, they were given a brief explanation on MASTIC's function as an Information Centre, by Principal Assistant Director 2, Mr Halimi Mahmud. Later on they were also given a tour of MASTIC's Library and an explanation on MASTIC's network structure and information system application

MASTIC played host to a group from the Science and Technology Information Center, Taiwan. The visit aimed to create a better friendship between the two centres. It also paved ways for future cooperation between the two centres.

The delegation comprises Director General, Mr Ching Lung Liu, Director of International Exchange and Cooperation Division, Mr Yu, Prof Mei-Hwa Yang, Mr Bai Li Huang and Ms Yea-Huey Liao.



Mr Salleh Supian explaining on MASTIC network system



Ms Saonah offers a glimpse of information available in MASTIC

Hari Raya Feast



Staff of MASTIC and MOSTE enjoying the spread during the Hari Raya celebration organised by MASTIC, International Division and Conservation and Environmental Management Division.

Taking a break after the meal are from left, Ms Vathsala Ponniah, Ms Haliza, Ms Hiswani and Ms Fadzilah Ahmad Din



Hari Raya feast is an annual celebration in MASTIC. Thus allowing the staff to mingle and enjoying the festival offerings.

If you have any comments, please write to us.
We welcome your suggestions.

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