



MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION
MALAYSIA

NATIONAL SURVEY OF
RESEARCH AND DEVELOPMENT
(R&D) 2012



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AND INNOVATION MALAYSIA

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**National Survey of
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FOREWORD

The 2012 Report on the National Survey of Research & Development was based on the survey carried out in 2011 and 2012 for the financial years 2008, 2009, 2010 and 2011. The survey was first carried out in 1994 to assess the trends and developments in R&D in Malaysia, specifically in institutions of higher learning, government agencies and research institutes, and the business enterprise. From 1994 to 2008, the survey was conducted every two years. However, since 2008, it has been conducted every year.

The survey received good cooperation from the all sectors involved, and we hope that this cooperation will continue and be even better in future. We certainly will not spare any efforts in enhancing the usefulness of the survey, as it has always been our objective to make it an informative tool for policy makers to develop strategies and directions for R&D in Malaysia and to benchmark our country's performance in R&D with that of other countries.

TABLE OF CONTENTS

ACKNOWLEDGEMENT	iii
RESEARCH TEAM	iv
FOREWORD	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	viii
LIST OF TABLES	ix
EXECUTIVE SUMMARY	x - xv
KEY R&D TERMS AND DEFINITIONS	xvi - xxi
CHAPTER 1: INTRODUCTION	1
1.0 PREAMBLE	1
1.1 THE NATIONAL SURVEY OF R&D	2
1.2 THE OBJECTIVES OF THE SURVEY	3
1.3 THE SCOPE OF THE SURVEY	3
1.4 THE ORGANISATION OF THE REPORT	3
CHAPTER 2: METHODOLOGY OF THE SURVEY	4
2.0 INTRODUCTION	4
2.1 SURVEY RESPONDENTS BY SECTOR	4
2.2 SURVEY METHODOLOGY	4
2.3 PROCEDURES TO INCREASE PARTICIPATION IN THE SURVEY	5
2.4 PARTICIPATION OF THE BUSINESS SECTORS, IHLs, AND GRIs	6
2.5 ACCURACY AND RELIABILITY OF THE R&D DATA	8
CHAPTER 3: OVERVIEW OF R&D IN MALAYSIA	11
3.0 INTRODUCTION	11
3.1 GROSS EXPENDITURE ON R&D	12
3.2 SOURCES OF FUNDS	15
3.3 HUMAN RESOURCE DEVELOPMENT	15
3.4 CONCLUSION	19
CHAPTER 4: R&D IN THE BUSINESS ENTERPRISE	20
4.0 INTRODUCTION	20
4.1 BUSINESS EXPENDITURE ON R&D (BERD)	20
4.2 SOURCES OF FUNDS FOR R&D IN THE BUSINESS ENTERPRISE	23
4.3 HUMAN RESOURCE DEVELOPMENT	24
4.4 CONCLUSION	26
CHAPTER 5: R&D IN THE INSTITUTIONS OF HIGHER LEARNING (IHLs)	27
5.0 INTRODUCTION	27
5.1 GROSS EXPENDITURE ON R&D	27
5.2 SOURCES OF FUNDS	29
5.3 HUMAN RESOURCE DEVELOPMENT	30
5.4 CONCLUSION	33

CHAPTER 6: R&D IN THE GOVERNMENT AGENCIES AND RESEARCH INSTITUTES (GRIs)	34
6.0 INTRODUCTION	34
6.1 GROSS EXPENDITURE ON R&D	36
6.2 SOURCES OF FUNDS	37
6.3 HUMAN RESOURCE DEVELOPMENT	39
6.4 CONCLUSION	39
CHAPTER 7: INTERNATIONAL COMPARISONS	40
7.0 INTRODUCTION	40
7.1 GROSS EXPENDITURE ON R&D ACROSS COUNTRIES	40
7.2 R&D INTENSITY: GERD PER GDP	42
7.3 BUSINESS EXPENDITURE ON R&D	43
7.4 HUMAN RESOURCE DEVELOPMENT IN R&D	45
7.5 CONCLUSION	48
CHAPTER 8: CONCLUSION	49
8.0 INTRODUCTION	49
8.1 THE WAY FORWARD	50
APPENDIX	
LIST OF IHL AND GRI	51

EXECUTIVE SUMMARY

▶ Malaysia's gross expenditure on R&D (GERD) has steadily increased since 2000. A sharp increase in GERD is particularly notable between 2006 and 2009, reaching close to an estimated RM7.2 billion in 2009; an increase of 97.4% percent over that of 2006. In 2011, total R&D spending across all sectors of the economy, public and private, was estimated at RM9.4 billion.

▶ Malaysia's research intensity (GERD/GDP), which is the percentage of her GDP that is spent on R&D, has also charted a consistent increase since 2004. Indeed, GERD/GDP rose from 0.63% in 2004 to 0.79% in 2008, and further to 1.01% in 2009, meeting the target of 1.0% set in RMKE-10 to be achieved by 2015. Our research intensity continued to improve, and in 2010 and 2011, Malaysia recorded a GERD/GDP of 1.07%.

▶ From 2002 to 2011, the business sector has been the largest performer of R&D in Malaysia, accounting for over 50% of the GERD since 2000. In 2011, the business enterprise is estimated to have spent RM5.3 billion on R&D activities. Although they remain the largest performer of R&D in the country, the amount reported for 2011 is a decrease from the previous expenditure of RM5.5 billion in 2010.

▶ Second to the business sector in R&D spending was the higher education sector, consisting of both public and private institutions of higher learning, whose expenditure has increased over the years, recording approximately 29% of the GERD in 2010 and 2011.

▶ In 2011, the largest percentage (66.4%) of the expenditure went into Applied Research (RM6.3 billion), followed by Basic Research (RM1.6 billion) and Experimental Development (RM1.5 billion). The bulk of the basic research (82.2%) was conducted in the IHLs.

▶ The top five fields of research (FOR) in 2011 were:

- ICT (38.3%);
- Engineering and Technology (24.2%);
- Natural Sciences (12.8%);
- Agricultural and Forestry (7.1%); and
- Biotechnology (6.8%).

- ▶ The top five socio-economic objectives (SEO) for which R&D was carried out in 2011 were:
 - Sustainable Economic Development (41.5%);
 - Advancement of Knowledge (10.5%);
 - Advanced Experimental and Applied Science (16.8%);
 - Society (13.8%); and
 - Environment (6.5%).

Only 2.3% of the R&D projects were carried out for the purpose of defence and security.

▶ The major sources of funds for R&D in 2011 were business (55.0%), at an estimated RM5.2 billion, followed closely by the federal government (41.4%), at an estimated RM3.9 billion. The government plays a major role in national R&D, providing incentives for R&D in the form of various grants and double tax exemption to the business sector, and research grants, labour cost, and research facilities to IHLs and GRIs. 99.4% and 86.4% of the funding for R&D in the GRIs and the IHLs respectively come from the government.

▶ The year 2011 recorded the highest headcount (96,961) for R&D personnel, which includes researchers, technicians, and support staff. The highest number of researchers (73,752) was also recorded in 2011, with an estimated 58.0 researchers out of 10,000 labour force, topping the target set by the Ninth Malaysia Plan (9MP) of 50 researchers per 10,000 labour force by 2010.

▶ The headcount of researchers with PhDs and masters degrees has increased markedly:

- 7,001 researchers with PhDs (2006) to 33,272 (2011); and
- 5,327 researchers with Masters (2006) to 24,691 (2011).

▶ Female participation in R&D has steadily increased over the years. In 2008, women accounted for 40.9% of Malaysia's R&D workforce, while in 2009, 50.9% of the workforce were women, the highest recorded since 2000, outnumbering their male counterparts by a small margin. The figures then dropped slightly to 48.8% and 48.7% respectively in 2010 and 2011. The proportion of female relative to male researchers is much higher than that of many advanced economies.



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