Department of Science and Technology | Statistics South Africa | Human Sciences Research Council

CeSTII SURVEY OF RESEARCH & EXPERIMENTAL DEVELOPMENT (R&D) INPUTS SCIENCE COUNCILS/ GOVERNMENT/ NOT-FOR-PROFIT 2005/6 FINANCIAL YEAR

Organisation	Please modify address label if necessary

AUTHORITY

The Centre for Science, Technology and Innovation Indicators (CeSTII), within the Knowledge Systems Programme of the Human Sciences Research Council (HSRC), conducts the Survey of Inputs into Research and Experimental Development (R&D) for the Department of Science and Technology (DST). The Survey is a component of Official Statistics, as defined in the Statistics Act No. 6 of 1999, and all data gathered for this survey is confidential. The HSRC and DST will not disseminate any information identifiable with an organisation without their consent.

PURPOSE AND SCOPE OF SURVEY

The R&D survey collects data on the inputs into R&D activities performed **IN-HOUSE** in South Africa by all organisations (Including Business, Government, Science Councils, Not-for Profit and Higher Education). The data is used for planning and monitoring purposes and for measuring international competitiveness. Previous survey results may be viewed at www.hsrc.ac.za/RnDSurvey. This survey covers the Financial Year 1 March 2005 to 28 February 2006 (or your nearest complete financial year).

DUE DATE

Kindly complete and return this questionaire in the envelope provided as soon as possible, but no later than 31st October 2006 to: **R&D Survey, Private Bag X2, Vlaeberg 8018.**

ASSISTANCE

To assist you with queries kindly contact one of the survey managers:

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Details of person completing this questionnaire (Please print)

Name (With title)		**Tel**	( )
Designation		**Fax**	( )
Date		**Cell**	( )
Signature		**E-mail**	

THE FOLLOWING DEFINITIONS ARE IMPORTANT IN THE COMPLETION OF THE SURVEY QUESTIONNAIRE: WHAT IS R&D?

Definition

This survey follows the approach of the Organisation for Economic Co-operation and Development (OECD), which defines Research and Experimental Development (R&D) as:

- **Research** is creative work and original investigation undertaken on a systematic basis to gain new knowledge, including knowledge of humanity, culture and society.
- **Development** is the application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes.

The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned.

For example investigating electrical conduction in crystals is basic research; application of crystallography to the properties of alloys is applied research. New chip designs involve development. Investigating the limiting factors in chip element placement lies at the border between basic and applied research. Much business R&D involves development.

R&D Includes – but is not limited to:

Activities of personnel who are obviously engaged in R&D. In addition, research activity includes:

- The provision of professional, technical, administrative or clerical support and/or assistance to personnel directly engaged in R&D
- Management of personnel who are either directly engaged in R&D or are providing professional, technical or clerical support to those performing R&D
- Software development where the aim of the project is the systematic resolution of a scientific or technological uncertainty
- Research work in the biological, physical and social sciences, and the humanities
- Social science research includes economic, cultural, educational, psychological and sociological research.
- Research work in engineering and the medical sciences
- R&D projects performed for other parties
- "Feedback R&D" directed at solving problems occurring beyond the original R&D phase, for example technical problems arising during initial production runs.

R&D Excludes:

The following specific ROUTINE activities are excluded, except where they are an essential part of R&D:

- Scientific and technical information services
- Engineering and technical services
- General purpose or routine data collection
- Standardisation and routine testing
- Feasibility studies (except into R&D projects)
- Specialised routine medical care, for example routine pathology services
- The commercial, legal and administrative aspects of patenting, copyrighting or licensing activities
- Routine computer programming, systems work or software maintenance where there are no technological uncertainties to be resolved.

PART 1: GENERAL INFORMATION

1. **Parent organisation/Department**

2. **Name of organisation/ unit**

3. **Number of employees**
   (include staff on contract for six months or longer)

4. **Did the reporting organisation/unit perform any <u>IN-HOUSE R&D</u> in South Africa during the financial year?**

- In-house R&D refers to R&D performed by the reporting unit on its own behalf or on behalf of the others.
- Only R&D performed in South Africa should be recorded.

Yes ☐ **Please continue with Question 5**

No ☐ **Please proceed to Part 5: Question 13 and 14 on <u>Outsourced</u> R&D**

☐ **If your reporting organisation/unit does *not* do any In-House and/or Outsourced R&D, please tick this box and return the questionnaire as a NIL response.**

PART 2: IN-HOUSE R&D PERSONNEL

Report for all R&D personnel, permanent and contract (6 months or longer).

Researchers
Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned.

Technicians directly supporting R&D
Persons doing technical tasks in support of R&D, normally under the direction and supervision of a Researcher.

Other personnel directly supporting R&D
Executive and managerial level
Executives and directors concerned primarily with budgets and human resources in support of research, rather than project management.
Administrative and support staff
Skilled and unskilled crafts workers supporting research.
Secretarial, administrative and clerical personnel working on, or directly associated with, R&D activity.

NOTE: Do not include personnel **indirectly** supporting R&D: Typical examples are transportation, storage, cleaning, repair, maintenance and security activities, as well as administration and clerical activities undertaken not exclusively for R&D (such as the activities of central finance and personnel departments).Allowance for these should be made under overheads in R&D expenditure (current expenditure – **Question 7D**) but such persons should not be included as R&D Personnel.

5. HEADCOUNT OF R&D PERSONNEL

Provide the headcount of all R&D personnel according to categories below

Personnel Categories and Highest Qualification	African		Coloured		Indian		White		Subtotal		TOTAL
	M	F	M	F	M	F	M	F	M	F	
Researchers											
Doctorates											
Masters/Hons/Bachelors or equivalent											
Diplomas and other											
RESEARCHER TOTAL											
Technicians /Technologists											
Doctorates											
Masters/Hons/Bachelors or equivalent											
Diplomas and other											
TECHNICIAN TOTAL											
Other personnel directly supporting R&D											
(a) Executive and managerial level											
Doctorates											
Masters/Hons/Bachelors or equivalent											
Diplomas and other											
Total Executive and Managerial											
(b) Administrative and support staff											
Doctorates											
Masters/Hons/Bachelors or equivalent											
Diplomas and other											
Total administrative and support staff											

CARRY SUBTOTALS OVER TO QUESTION 6

6. FULL-TIME EQUIVALENTS AND LABOUR COSTS OF R&D PERSONNEL

Provide an estimate of Person Years of effort on R&D (or Full-Time Equivalents), according to the categories below.

CALCULATING 'FULL TIME EQUIVALENT' (FTE) PERSONS

Note: For the purpose of this survey, an employee can only work one person year each year. For example, a full time employee spending 40% of his/her time on R&D during half of the survey year would contribute 0.4 x 0.5 = 0.2 FTE to the R&D effort, even if his/her average time per week was, for example 60 hours. A part-time employee working 40% of a full time year doing only R&D would contribute 0.4 FTE to the R&D effort.

Personnel Categories	Headcounts (From Q 5)			Full Time Equivalents (FTE's)			Average annual labour cost per person R'000 (Excl. VAT) (B)	Calculated labour cost of R&D R'000 (Excl. VAT) (A x B)
	M	F	Total	M	F	Total (A)		
Researchers								
Technicians directly supporting R&D								
Other personnel directly supporting R&D:								
Executive and Managerial level								
Administrative and support staff								
TOTAL LABOUR COST OF R&D								

Carry over total calculated labour cost to question 7C

PART 3: IN-HOUSE R&D EXPENDITURE

7. IN-HOUSE R&D EXPENDITURE

Allocate in-house R&D expenditure as follows:

CAPITAL EXPENDITURE ON R&D

- The full price of capital expenses must be reported in the year of purchase (do not depreciate)
- If the asset has been/will be used for more than one activity, include only an estimate of the portion used for R&D.

Including - but not limited to:

- Expenditure on fixed assets used in the R&D projects of your business.
- Acquisition of software, including fees, expected to be used for more than one year.
- Purchase of databases expected to be used for more than one year.
- Major repairs & improvements on land & buildings.

Excluding:

- Other repairs and maintenance expenses.
- Depreciation provisions.
- Proceeds from the sale of R&D assets.

		R'000 (Excl. VAT)					
Vehicles, plant, machinery and equipment	**A**						
Land, buildings and other structures	**B**						

LABOUR COSTS OF R&D

		R'000 (Excl. VAT)					
Labour Costs of R&D personnel (from Question 6)	**C**						

OTHER CURRENT EXPENDITURE ON R&D

Including - but not limited to:

- Materials, fuels and other inputs.
- Water, electricity and other overheads expenses.
- Repair and maintenance expenses.
- Payments to outside organisations for use of specialised testing facilities.
- Payments to outside organisations for analytical work, engineering or other specialised services in support of R&D projects carried out by this department/unit.
- Commission/consultant expenses for research projects carried out by this department/unit.
- Other R&D expenses and indirect costs.
- The relevant % of labour costs of persons providing indirect services such as Head office, HR, Finance, security, maintenance personnel, staff of central libraries, IT departments.

Excluding:

- Contract R&D expenses where the research project is carried out elsewhere by others on behalf of this department/unit.
- Payments for purchases of technical know-how.
- Payments for patent searches.
- Depreciation provisions.

		R'000 (Excl. VAT)					
Other Current Expenditure	**D**						

	R'000 (Excl. VAT)						
TOTAL R&D EXPENDITURE (A + B + C + D)							

8. SOURCES OF FUNDS FOR IN-HOUSE R&D

Provide a breakdown of the total R&D expenditure (as reported in question 7) according to sources of funds.

	R'000 (Excl. VAT)					
Organisation						
Own funds						
Government (includes Science Councils e.g. CSIR, Departments and Institutes)						
Grants (including SPII, Innovation Fund etc)						
Contracts						
Business						
Business (Domestic only)						
Other South African						
Higher Education						
Not For Profit Organisations						
Individual Donations						
Foreign						
All sources						

	R'000 (Excl. VAT)					
TOTAL R&D EXPENDITURE (to correspond with Question 7)						

9. PROVINCIAL EXPENDITURE ON R&D

Please state the location where your organisations/unit carried out R&D activities and the percentage of the total R&D expenditure.

Specify where R&D is actually performed, rather than where it is managed/financed from.

Eastern Cape	
Free State	
Gauteng	
KwaZulu-Natal	
Limpopo	

Mpumalanga	
Northern Cape	
North-West	
Western Cape	
TOTAL	**100%**

PART 4: CATEGORIES OF IN-HOUSE R&D EXPENDITURE

10. IN-HOUSE R&D CURRENT EXPENDITURE BY TYPE OF R&D

Specify the percentage of total IN-HOUSE LABOUR COSTS and OTHER CURRENT R&D expenditure by type of R&D.

Basic Research

- Work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without a specific application in view.
- Analyses of properties, structures and relationships with a view to formulating and testing hypotheses, theories or laws.
- The results of basic research are usually published in peer-reviewed scientific journals.

Percentage		

Applied Research

- Original investigation to acquire new knowledge with a specific application in view.
- Activities that determine the possible uses for the findings of basic research.
- The results of applied research are intended primarily to be valid for a single or limited number of products, operations, methods, or systems.
- Applied research develops ideas into operational form.
- Information or knowledge derived from applied research may be published in peer-reviewed journals or subjected to other forms of intellectual property protection.

Percentage		

Experimental Development

- Systematic work using existing knowledge gained from research and/or practical experience for the purpose of creating new or improved materials, products, processes or services, or improving substantially those already produced or installed.

Percentage		

TOTAL	1	0	0

11a. RESEARCH FIELDS (RF)

Classify R&D according to Research Fields with associated % expenditure. (See Code book)

The RF Codes are based on recognised academic disciplines and emerging areas of study.

RF Codes						Percentage		
RF								
RF								
RF								
RF								
RF								

RF Codes						Percentage		
RF								
RF								
RF								
RF								
RF								
					Total	1	0	0

11b. MULTI-DISCIPLINARY R&D

Please estimate the percentage of R&D expenditure allocated to the following areas:

- Multi-disciplinary R&D combines several research fields or disciplines. If your organisation performs such R&D, as described below, please provide the applicable % of total R&D Expenditure.
- Note that the percentages will most likely not total 100%.

Multidisciplinary Area of R&D	% of R&D expenditure
Biotechnology	
Nanotechnology	

No Multi-Disciplinary R&D in these areas	

← TICK if no such R&D is done

11c. R&D AND NATIONAL PRIORITY AREAS

Please estimate the percentage of R&D expenditure allocated to the following areas:

- National Policy and the National R&D Strategy emphasise the importance of certain areas of R&D.
- Some of these National Priority areas are listed below. If your organisation performs R&D in these areas, please provide the applicable % of total R&D Expenditure.
- Note that the percentages will most likely not total 100%.

National Priority Area of R&D	% of R&D expenditure
Open source software	
New materials	
Tuberculosis (TB), HIV/AIDS, Malaria	

No R&D in these areas	

← TICK if no such R&D is done

12. SOCIO-ECONOMIC OBJECTIVES (SEO)

Classify R&D according to Socio-Economic Objectives with associated % expenditure. (See Code book)

The SEO classification provides an indication of the sector of the national economy which will be the main beneficiary of the R&D you are practising.

SEO Codes						Percentage		
S								
S								
S								
S								
S								

SEO Codes						Percentage	
S							
S							
S							
S							
S							
Total						1	0	0

PART 5: R&D OUTSOURCED / CONTRACTED OUT

Outsourced R&D refers to:

- Outsourced or extramural expenditures are the amounts an organization paid or committed to pay to another organisation for the performance of R&D during a specific period.
- This includes acquisition of R&D performed by and/or grants given to other organisations for performing R&D.

13. State value of R&D outsourced **inside South Africa.**

R'000 (Excl. VAT)

14. State value of R&D outsourced **outside South Africa.**

R'000 (Excl. VAT)

THANK YOU FOR YOUR TIME AND EFFORT