



Department of Arts, Culture, Science and Technology

**SOUTH AFRICAN SURVEY OF RESEARCH AND EXPERIMENTAL DEVELOPMENT  
NON-PROFIT ORGANISATIONS: 2001/2002**

| ORGANISATION |
|--------------|
| <br><br><br> |

**PURPOSE OF SURVEY**

The purpose of this survey is to collect information on the status of R&D effort and activities in South Africa. This information is invaluable for the development of policy and programmes in support of research and development activities in the country. The principal users of the information will be businesses, government and advisors to government, researchers, and national, regional and international research and technology organisations.

**SURVEY ENDORSEMENT**

This survey is undertaken by the Human Sciences Research Council (HSRC) on behalf of the Department of Arts, Culture, Science and Technology (DACST). We kindly request your co-operation by completing and returning this form to us by the due date indicated below. In the near future follow on surveys will be conducted as a component of Official Statistics. As is current practice with many other countries, completion and submission of future surveys will be compulsory.

**CONFIDENTIALITY**

All information gathered by this survey will be held in the strictest confidence. Under no circumstances will either the HSRC or DACST or any organisation associated with this survey publish, release, or disclose any information on, or identifiable with, individual companies, business units or R&D units.

**DUE DATE**

Please complete and return this form to us no later than **15 July 2002**.

**HELP AVAILABLE**

We have enclosed a guide in this pack to assist you in providing the necessary information, and we request that you refer to it before and during the completion of the form. If you have any additional problems in completing this form and/or in meeting the due date, please do not hesitate to contact the following survey managers for assistance:

| Name | Contact Number | E-mail |
|------|----------------|--------|
|      |                |        |
|      |                |        |

**Dr. Michael Kahn**

Executive Director: Knowledge Management  
Human Sciences Research Council

Person completing this form and whom we should contact if any queries arise regarding this form:

|             |  |
|-------------|--|
| Name        |  |
| Designation |  |
| Signature   |  |

|        |     |
|--------|-----|
| Tel:   | ( ) |
| Fax:   | ( ) |
| Cell:  |     |
| E-mail |     |

**WE THANK YOU FOR YOUR CO-OPERATION**

### IMPORTANT NOTES (please read before proceeding)

- This survey requires some degree of effort on your part to ensure that all questions are properly answered. We request your co-operation in ensuring that all information provided is as accurate as possible.
- The survey questionnaire is designed to collect information that will allow for the benchmarking of R&D in South Africa and/or comparisons with countries internationally. This information is vital to ensuring that South Africa remains proficient in the advancement of knowledge and globally competitive in the development of new products and services.
- Given that this survey will soon become part of Official Statistics, we hope that you will consider this questionnaire as preparation by your organisation for the regular submission of this information in the future. The compulsory reporting of this information in the future is necessary to ensure the development of proper policies and programmes to stimulate and promote research and development in South Africa, e.g., provision of tax incentives by SARS for R&D, funding and incentives by government for R&D work, etc.
- Please report all expenditure items in this survey **exclusive of Value Added Tax (VAT)**.
- Please report all monetary values in **thousands of Rands (R'000)**, e.g. report R20,000 as 20. Where the value in your accounts is not expressed in thousands of Rands, round the value up or down to the nearest thousand Rands.
- Figures reported should relate to expenditure incurred during the financial year, whether paid or not, and to income earned during the year, whether received or not. If exact figures are not available please provide careful estimates.
- Financial years are defined as the year beginning 1 March 2001 and ending on 28 February 2002 (e.g., financial year 2001/2002 indicates year beginning on 1 March 2001 and ending on 28 February 2002). Unless otherwise stated, all reporting in this survey should be for the **last completed financial year** of the organisation (that is, 2001/2002).
- Should the financial year of your organisation differ, please indicate so in the appropriate section, and report figures for the **financial year period ended before the date of this survey, i.e., July 2002**. This constitutes the financial year 2001/2002.
- This survey provides guides in text boxes to assist in defining important concepts and terms. The items listed under **Including** and **Excluding** in these text boxes are examples and should not be taken as a complete list of items to be included or excluded.

## What is R&D?

### Definitions

This survey follows the approach of the Organisation for Economic Co-operation and Development (OECD), which defines Research and Experimental Development (R&D) as creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to devise new applications.

### What does R&D include?

- Any activity classified as R&D is characterised by **originality**; it should have **investigation** as a primary objective, the outcome of which is new knowledge, with or without a specific practical application, or new or enhanced materials, products, devices, processes or services.
- R&D ends when work is no longer primarily investigative.

### Examples of R&D

- Health and medical research
- Development of new survey methods, sampling methodologies, etc.
- Data collection, processing and interpretation which is conducted solely or primarily as part of an R&D project
- Research work in the biological, physical and social sciences, and the humanities.
- Social science research includes economic, cultural, educational, psychological and sociological research.
- Research and development of new computer software or substantial modifications to existing computer software.

This includes developments which lead to technological or scientific advances in:

- theoretical computer sciences
- operating systems e.g.: improvement in resource or interface management, a truly new operating system or the conversion of an operating system to a **significantly** different hardware environment
- programming languages e.g.: new languages, **significant** extension of an existing language or new or a **significantly** different language translator
- applications if a **significant** technological step forward is achieved
- Feedback R&D directed at solving problems occurring beyond the original R&D phase, for example, technical problems arising during initial production runs
- Industrialisation costs

R&D excludes (except where used primarily for the support of, or as part of, R&D projects):

- General purpose or routine data collection
- Policy related studies, management studies, efficiency studies
- Activities associated with standards compliance
- Specialised routine medical care, for example routine pathology services
- Routine computer programming, systems maintenance or software application
- Operations research and mathematical or statistical analysis
- Commercial, legal and administrative aspects of patenting, copyrighting or licensing activities
- Scientific and technical information services
- Consumer surveys, advertising, market research
- Routine quality control and testing
- Cosmetic modifications or style changes to existing products
- Pre-production activities such as demonstration of commercial viability, tooling up and trial production runs
- Prospecting, exploring or drilling for minerals, petroleum or natural gas

**PART 1: GENERAL ORGANISATION INFORMATION**

1. Name of organisation

2. Name of parent organisation? (if applicable)

3. Please indicate the total number of employees working for your organisation for the financial year 2001/2002. (see note below)

**Including**

- Persons paid a retainer, wage or salary
- Full-time and part-time employees
- Permanent, temporary and casual employees
- Managerial and executive employees
- Employees absent on paid or prepaid leave
- Working proprietors and partners
- Employees on workers' compensation who continue to be paid through the payroll

**Excluding**

- Persons paid by commission only
- Non-salaried directors
- Self-employed persons such as consultants and contractors
- Volunteers

4. Please indicate the start and end dates for your financial year (Day/Month).

| Start | End |
|-------|-----|
| /     | /   |

5. What was the total operating budget of the organisation for the financial year 2001/2002?

Please report in R'000

**PART 2: R&D CARRIED OUT BY THIS ORGANISATION****Note**

This part of the form seeks details of R&amp;D carried out by this organisation on its own behalf or on behalf of others.

**Including:**

- R&D carried out as a participant in any unincorporated joint venture
- R&D projects carried out on contract for other legal entities (such as businesses)
- Contracted out analytical work, engineering or other specialised services which are in support of R&D projects carried out by this organisation

**Excluding:**

- R&D projects funded by this organisation but carried out by others using their own facilities
- Provision of specialised services for the R&D projects of other organisations/legal entities

6. Did this organisation carry out any R&amp;D during the financial year 2001/2002?

Yes

☐

Please answer Question 7 and onwards

No

Please proceed to Question 14 on PAGE 14 and onwards

7. Please classify your R&D activities to Research Fields (please refer to Pages 17-19) and indicate the percentage of effort associated with each of these.

**Note:**

- The Research Fields (RF) Codes are based on recognised academic disciplines and emerging areas of study.
- More than one RF code may be provided, together with an associated percentage split.

| RF Codes |  |  |  |  |  | Percentage |  | RF Codes |  |  |  |  |  | Percentage |  |
|----------|--|--|--|--|--|------------|--|----------|--|--|--|--|--|------------|--|
| RF       |  |  |  |  |  |            |  | RF       |  |  |  |  |  |            |  |
| RF       |  |  |  |  |  |            |  | RF       |  |  |  |  |  |            |  |
| RF       |  |  |  |  |  |            |  | RF       |  |  |  |  |  |            |  |
| RF       |  |  |  |  |  |            |  | RF       |  |  |  |  |  |            |  |
| RF       |  |  |  |  |  |            |  | RF       |  |  |  |  |  |            |  |
| RF       |  |  |  |  |  |            |  | RF       |  |  |  |  |  |            |  |

8. Please classify your R&D activities to Socio-Economic Objective (Please refer to Pages 20-23) and indicate the associated percentage split.

**Notes:**

- The Socio-economic Objective (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.
- More than one SEO code may be provided, together with an associated percentage split.

| SEO Codes |  |  |  |  |  | Percentage |  | SEO Codes |  |  |  |  |  | Percentage |  |
|-----------|--|--|--|--|--|------------|--|-----------|--|--|--|--|--|------------|--|
| S         |  |  |  |  |  |            |  | S         |  |  |  |  |  |            |  |
| S         |  |  |  |  |  |            |  | S         |  |  |  |  |  |            |  |
| S         |  |  |  |  |  |            |  | S         |  |  |  |  |  |            |  |
| S         |  |  |  |  |  |            |  | S         |  |  |  |  |  |            |  |
| S         |  |  |  |  |  |            |  | S         |  |  |  |  |  |            |  |
| S         |  |  |  |  |  |            |  | S         |  |  |  |  |  |            |  |

10. How much did the organisation spend on R&D during the financial year 2001/2002 according to the categories below?

### CAPITAL EXPENDITURE

**Note**

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**

- Expenditure on fixed assets used in the R&D projects of this organisation.
- Acquisition of software expected to be used for more than one year
- Purchase of databases expected to be used for more than one year
- Capitalised computer software licence fees

**Excluding**

- Repairs and maintenance
- Depreciation provisions
- Capitalised assets resulting from R&D projects (the component costs of these projects should be recorded in this question where appropriate)
- Software for own account produced as part of R&D (include in current expenditure)

Please report in R'000

**Vehicles, plant, machinery and equipment**

A

|  |  |  |  |  |  |  |
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|--|--|--|--|--|--|--|

**Land; buildings and other structures**

B

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### LABOUR COSTS

**Including:**

- Gross earnings before taxation and other deductions
- Overtime earnings, penalty payments and shift allowances
- Leave loadings, bonuses, commission payments
- Employer contributions into superannuation including salary sacrifice
- Fringe benefits tax and payroll tax
- Payments to contract staff on the payroll of this organisation
- Severances, terminations and redundancies
- Workers' compensation premiums/costs
- Provision expenses for employee entitlements

Please report in R'000

**Labour Costs**

C

|  |  |  |  |  |  |  |
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### OTHER CURRENT EXPENDITURE

**Including:**

- Materials, fuels and other inputs
- Rent, leasing and hiring 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 organisation
- Commission/consultant expenses for research projects carried out by you
- Other R&D expenses

**Excluding:**

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

Please report in R'000

**Other Current Expenditure**

D

|  |  |  |  |  |  |  |
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**Total (A + B + C + D)**

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11. Please specify the total R&D expenditure (reported in Question 10 on Page 6) that was directed towards the following types of R&D activities.

**Pure Basic Research**

**Note:**

- Experimental or theoretical work undertaken primarily to acquire new knowledge without a specific application in view.
- Is carried out without looking for long term economic or social benefits other than the advancement of knowledge.
- Humanities R&D would normally involve this type of research.

Please report in R'000

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**Strategic Basic Research**

**Note**

- Research directed into specific broad areas in expectation of useful discoveries.
- Research providing the broad base of knowledge necessary for the solution of recognised practical problems

Please report in R'000

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**Applied Research**

**Note**

Original work undertaken:

- To acquire new knowledge with a specific application in view.
- To determine the possible uses for the findings of basic research.
- To determine new methods or ways of achieving specific and pre-determined objectives.

Please report in R'000

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**Experimental Development**

**Note**

- 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.

Please report in R'000

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**Total (to agree with Question 10 on Page 6)**

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|--|--|--|--|--|--|--|
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|--|--|--|--|--|--|--|

12. Please state the location where your organisation carried out the R&D activities for the financial year 2001/2002 and the percentage of the total amount spent (the total amount being the figure reported in Question 10 on Page 6).

| Inside South Africa | % |
|---------------------|---|
| Eastern Cape        |   |
| Free State          |   |
| Gauteng             |   |
| KwaZulu-Natal       |   |
| Limpopo             |   |
| Mpumalanga          |   |
| Northern Cape       |   |
| North-West          |   |
| Western Cape        |   |

| Outside South Africa                             | % |
|--|---|
| SADC Countries: <i>(please specify)</i>          |   |
|  |   |
| Other African Countries: <i>(please specify)</i> |   |
|  |   |
| Elsewhere: <i>(please specify)</i>               |   |
|  |   |
|  |   |

13. Please provide a breakdown of the R&D expenditure (reported in Question 10 on Page 6) according to the sources of funding for R&D.

**Note**

Sources should be the original sources providing funds. Funds received from intermediary sources which are funded from several sources should be reported in 'Other South African sources'.

**Including:**

- Funding from grants, contracts, commissions, donations, etc.

**Excluding:**

- The value of taxation concessions for R&D

|  | Please report in R'000  |
|--|---|
| Own Funds .....  | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| Local Business .....   | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| Foreign Business .....   | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| Government Funds .....   | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| Local/International NPOs (e.g., foundations, etc.) .....               | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| International development agencies (e.g., EU, USAID, UNDP, etc.) ..... | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| Donations and bequests from local/foreign private individuals .....    | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| Other South African sources (please specify)                           | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| .....  | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| .....  | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| Other Overseas sources (please specify)                                | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| .....  | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| .....  | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |
| TOTAL (to agree with Question 10 on Page 6) .....                      | <table border="1" style="display: inline-table; width: 150px; height: 20px;"></table> |

14. Please indicate the R&D amounts (in R'000) that you spent for the 2000/2001 financial year and the amounts you estimate spending for the 2002/2003 and 2003/2004 financial years.

| Financial Years          | Total<br>Please report in<br>R'000 |
|--------------------------|------------------------------------|
| 2000/2001 (actual spend) |                                    |
| 2002/2003 (est. spend)   |                                    |
| 2003/2004 (est. spend)   |                                    |



**PART 3: R&D OUTSOURCED TO OTHER SOUTH AFRICANS IN 2001/2002**

15. For the financial year 2001/2002 did your organisation fund other organisations/agencies in South Africa to carry out R&D work on its behalf?

Yes ☐ Please answer Question 16 and onwards

No ☐ Please proceed to Question 18

16. Please classify your outsourced R&D to Research Field (Please refer to Pages 17-19).

|    |  |  |  |  |  |
|----|--|--|--|--|--|
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |

|    |  |  |  |  |  |
|----|--|--|--|--|--|
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |

17. Please state the amount spent on outsourced R&D according to the following entities/sectors.

| Outsourced to:                            | No. of Projects | Total Value<br>Please report in R'000 |
|---|-----------------|---------------------------------------|
| Universities/Technikons/Colleges          |                 |                                       |
| Research Institutes (incl. non-profit)    |                 |                                       |
| Science Councils (e.g. CSIR, Mintek etc.) |                 |                                       |
| Private Companies                         |                 |                                       |
| Others (please specify):                  |                 |                                       |
|   |                 |                                       |
| <b>TOTAL</b>                              |                 |                                       |

**PART 4: R&D OUTSOURCED OUTSIDE SOUTH AFRICA IN 2001/2002**

18. For the financial year 2001/2002 did your organisation fund other organisations/agencies outside South Africa to carry out R&D work on its behalf?

Yes ☐ Please answer Question 19 and onwards

No ☐ Please proceed to PAGE 10

19. Please classify your outsourced R&D to the Research Field (Please refer to Pages 17-19).

|    |  |  |  |  |  |
|----|--|--|--|--|--|
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |

|    |  |  |  |  |  |
|----|--|--|--|--|--|
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |
| RF |  |  |  |  |  |

20. State the amount spent on outsourced R&D according to the following entities/sectors.

| Outsourced to:                         | No. of Projects | Total Value<br>Please report in R'000 |
|--|-----------------|---------------------------------------|
| Universities/Technical Colleges        |                 |                                       |
| Research Institutes (incl. non-profit) |                 |                                       |
| Private Companies                      |                 |                                       |
| Others (please specify):               |                 |                                       |
|  |                 |                                       |
| <b>TOTAL</b>                           |                 |                                       |

## PART 5: R&D STAFF AND STUDENTS

**Note**

- Please report for all staff for whom this institution pays payroll tax in the appropriate tables.
- Please report for post graduate student researchers **SEPARATELY** in the appropriate tables.
- The group classification in the tables below accords with the principles of employment equity legislation.
- The following notes should be used to determine the allocation of staff.

## Researchers

***Including***

- Staff working on the conception and/or creation of new knowledge/products
- Executives and directors involved in the planning or management of scientific and technical aspects of R&D projects

**Excluding**

- Managers and directors concerned primarily with budgets and human resources, rather than project content

**Technicians directly supporting R&D**

- Persons doing technical tasks in support of R&D, normally under the direction and supervision of a researcher.
- Typical activities include preparation for experiments, taking records, preparation of charts and graphs and coding data.

**Other staff directly supporting R&D**

- Skilled and unskilled craftspersons
- Secretarial, administrative and clerical staff working on, or directly associated with, R&D activity
- Executives and directors concerned primarily with budgets and human resources, rather than project content
- Staff working in, or supporting, library and information services

21. Please report headcount for **South African Staff** involved in R&D for the financial year 2001/2002 according to the categories below. This includes staff born in South Africa, naturalised citizens and those with South African residency status.

| Headcount of South African Personnel    |         |   |        |   |          |   |       |   |       |   |               |  |
|---|---------|---|--------|---|----------|---|-------|---|-------|---|---------------|--|
| Qualifications and Personnel Categories | African |   | Indian |   | Coloured |   | White |   | TOTAL |   | % time on R&D |  |
|   | M       | F | M      | F | M        | F | F     | M | F     | M | F             |  |

## Researchers

|                                      |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| Doctoral degree or equivalent        |  |  |  |  |  |  |  |  |  |  |  |  |
| Masters degree or equivalent         |  |  |  |  |  |  |  |  |  |  |  |  |
| Honours degree or equivalent         |  |  |  |  |  |  |  |  |  |  |  |  |
| Bachelors degree or equivalent       |  |  |  |  |  |  |  |  |  |  |  |  |
| Diplomas and Higher Diplomas         |  |  |  |  |  |  |  |  |  |  |  |  |
| Non-degree/non-formal qualifications |  |  |  |  |  |  |  |  |  |  |  |  |

### Technicians directly supporting R&D

[illegible]**Other personnel directly supporting R&D**[illegible]

22. Please report headcount for **South African Post Graduate Students** involved in R&D for the financial year 2001/2002 according to the categories below. This includes students born in South Africa, naturalised citizens and those with South African residency status.

[illegible]

23. Please report headcount for **Non-South African Staff** involved in R&D for the financial year 2001/2002 according to the categories below. This includes staff with visa status and/or permanent and temporary work permits.

[illegible]

## Researchers

[illegible]

### Technicians directly supporting R&D

[illegible]**Other personnel directly supporting R&D**[illegible]

24. Please report headcount for **Non-South African Post Graduate Students** involved in R&D for the financial year 2001/2002 according to the categories below. This includes students with visa status and/or permanent and temporary work permits.

| <b>Headcount of Non-South African Post Graduate Students in R&amp;D</b> |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |
|---|-------------------|---|-----------------|---|-----------------------------|---|-----------------------------|---|-------------------------|---|-------|---|---------------|---|
|   | African Countries |   | Europe incl. UK |   | Oceania Australia NZ, etc.) |   | North America (USA, Canada) |   | Else-where (Asia, etc.) |   | TOTAL |   | % time on R&D |   |
|   | M                 | F | M               | F | M                           | F | M                           | F | M                       | F | M     | F | M             | F |
| <b>Post Graduate Students</b>   |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |
| Doctoral degree or equivalent   |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |
| Masters degree or equivalent  |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |
| Honours degree or equivalent  |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |
| Bachelors degree or equivalent  |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |
| Diplomas and Higher Diplomas  |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |
| <b>TOTAL</b>  |                   |   |                 |   |                             |   |                             |   |                         |   |       |   |               |   |

25. Please provide headcount of all **Staff** involved in R&D according to the categories below.

| R&D Staff Categories                   | Age Categories |       |       |       |       |      |       |
|--|----------------|-------|-------|-------|-------|------|-------|
|  | < 25           | 25-34 | 35-44 | 45-54 | 55-64 | > 64 | TOTAL |
| <b>South African R&amp;D Staff</b>     |                |       |       |       |       |      |       |
| Researchers                            |                |       |       |       |       |      |       |
| Technicians directly supporting R&D    |                |       |       |       |       |      |       |
| Other staff directly supporting R&D    |                |       |       |       |       |      |       |
| <b>Non-South African R&amp;D Staff</b> |                |       |       |       |       |      |       |
| Researchers                            |                |       |       |       |       |      |       |
| Technicians directly supporting R&D    |                |       |       |       |       |      |       |
| Other staff directly supporting R&D    |                |       |       |       |       |      |       |

26. Please provide headcount of all **Post Graduate Students** involved in R&D according to the categories below.

| R&D Staff Categories                     | Age Categories |       |       |       |       |      |       |
|--|----------------|-------|-------|-------|-------|------|-------|
|  | < 25           | 25-34 | 35-44 | 45-54 | 55-64 | > 64 | TOTAL |
| South African Post Graduate Students     |                |       |       |       |       |      |       |
| Non-South African Post Graduate Students |                |       |       |       |       |      |       |

## PART 6: R&amp;D STAFF TURNOVER

**Note**

- Please provide data for hiring and departure only for the financial year 2001/2002.
- The reference for Questions 31 and 32 is the total staff reported in PART 5.

27. Please indicate the turnover (headcount) of your **South African R&D staff** for the financial year 2001/2002.

| <b>South African R&amp;D Staff</b>             |                  |                           |              |
|--|------------------|---------------------------|--------------|
| <b>Researchers</b>                             | <b>New Staff</b> | <b>Staff Who Departed</b> | <b>TOTAL</b> |
| Doctoral degree                                |                  |                           |              |
| Masters degree or equivalent                   |                  |                           |              |
| Honours degree or equivalent                   |                  |                           |              |
| Bachelors degree or equivalent                 |                  |                           |              |
| Diplomas and Higher Diplomas                   |                  |                           |              |
| Non-degree/non-formal qualifications           |                  |                           |              |
| <b>Technicians directly supporting R&amp;D</b> |                  |                           |              |
| All degree qualifications                      |                  |                           |              |
| Technical qualifications (Higher Diplomas)     |                  |                           |              |
| Diplomas                                       |                  |                           |              |
| Other qualifications (incl. non-formal)        |                  |                           |              |
| <b>Other staff directly supporting R&amp;D</b> |                  |                           |              |
| All degree qualifications                      |                  |                           |              |
| Secondary qualifications                       |                  |                           |              |
| Other qualifications (incl. non-formal)        |                  |                           |              |

28. Please indicate the turnover (headcount) of your **Non-South African R&D staff** for the financial year 2001/2002.

| <b>Non-South African R&amp;D Staff</b>         |                  |                           |              |
|--|------------------|---------------------------|--------------|
| <b>Researchers</b>                             | <b>New Staff</b> | <b>Staff Who Departed</b> | <b>TOTAL</b> |
| Doctoral degree                                |                  |                           |              |
| Masters degree or equivalent                   |                  |                           |              |
| Honours degree or equivalent                   |                  |                           |              |
| Bachelors degree or equivalent                 |                  |                           |              |
| Diplomas and Higher Diplomas                   |                  |                           |              |
| Non-degree/non-formal qualifications           |                  |                           |              |
| <b>Technicians directly supporting R&amp;D</b> |                  |                           |              |
| All degree qualifications                      |                  |                           |              |
| Technical qualifications (Higher Diplomas)     |                  |                           |              |
| Diplomas                                       |                  |                           |              |
| Other qualifications (incl. non-formal)        |                  |                           |              |
| <b>Other staff directly supporting R&amp;D</b> |                  |                           |              |
| All degree qualifications                      |                  |                           |              |
| Secondary qualifications                       |                  |                           |              |
| Other qualifications (incl. non-formal)        |                  |                           |              |

29. Please indicate the reason for **Staff Departure** as reported in Question 27 and Question 28 for the financial year 2001/2002.

**Note:**  
Please report a headcount for each category of R&D Staff departing your institution according to destination.

| Reason for R&D Staff Departure |  |  |  |   |  |   |         |       |
|--------------------------------|--|--|--|---|--|---|---------|-------|
| Death/<br>Medical<br>Boarding  | Retirement<br>from<br>Labour-<br>force | Internal<br>Movement to<br>non-R&D<br>Work | Movement to<br>other R&D<br>positions in<br>South Africa | Movement to<br>other R&D<br>positions outside<br>South Africa | Movement to<br>non-R&D<br>positions in<br>South Africa | Movement to<br>non-R&D<br>positions outside<br>South Africa | Unknown | TOTAL |

#### South African R&D Staff

|          |  |  |  |  |  |  |  |  |
|----------|--|--|--|--|--|--|--|--|
| African  |  |  |  |  |  |  |  |  |
| Indian   |  |  |  |  |  |  |  |  |
| Coloured |  |  |  |  |  |  |  |  |
| White    |  |  |  |  |  |  |  |  |

#### Non-South African R&D Staff

|                                     |  |  |  |  |  |  |  |  |
|-------------------------------------|--|--|--|--|--|--|--|--|
| African countries                   |  |  |  |  |  |  |  |  |
| Europe (incl.<br>UK)                |  |  |  |  |  |  |  |  |
| Oceania<br>(Australia, NZ,<br>etc.) |  |  |  |  |  |  |  |  |
| North America<br>(USA, Canada)      |  |  |  |  |  |  |  |  |
| Elsewhere (Asia,<br>etc.)           |  |  |  |  |  |  |  |  |

30. Was the shortage/deficiency of skills within your R&D staff a **significant concern/issue** for your organisation during the financial year 2001/2002?

No ☐  
Yes ☐ Please answer Question 31

31. Please rate the measures used to address these shortages/deficiencies of R&D skills.

**Note:**  
• Please circle 0 if the measure was not used, or the appropriate number for the ratings.  
• Measures that were used should be rated as follows: 1-LEAST IMPORTANT, 5-VERY IMPORTANT

| Measures to Accommodate R&D Skill<br>Shortages / Deficiencies | Not<br>used | Rating            |   |                  |   |   |
|---|-------------|-------------------|---|------------------|---|---|
|   |             | 1-LEAST IMPORTANT |   | VERY IMPORTANT-5 |   |   |
| In-house Training   | 0           | 1                 | 2 | 3                | 4 | 5 |
| Internal Recruitment  | 0           | 1                 | 2 | 3                | 4 | 5 |
| Out-Sourced Training  | 0           | 1                 | 2 | 3                | 4 | 5 |
| Out-Sourced R&D   | 0           | 1                 | 2 | 3                | 4 | 5 |
| South African Recruitment                                     | 0           | 1                 | 2 | 3                | 4 | 5 |
| African Continent Recruitment                                 | 0           | 1                 | 2 | 3                | 4 | 5 |
| International Recruitment                                     | 0           | 1                 | 2 | 3                | 4 | 5 |
| Other (Please Specify):                                       |             | 1                 | 2 | 3                | 4 | 5 |
|   |             | 1                 | 2 | 3                | 4 | 5 |

ONCE AGAIN, WE THANK YOU FOR YOUR CO-OPERATION

# APPENDIX A: RESEARCH FIELD (RF) CLASSIFICATIONS

Please choose the RF classification which most appropriately describes the scientific discipline you are practising.

| <b>DIVISION 1</b>   | <b>NATURAL SCIENCES, TECHNOLOGY AND ENGINEERING</b>   |   |
|---|---|---|
| <b>CATEGORY</b>   | <b>GROUP</b>  |   |
| <i>Mathematical Sciences</i>                                  | RF10101<br>RF10102<br>RF10103<br>RF10199  | Pure mathematics<br>Applied mathematics<br>Statistics<br>Other mathematical sciences not classified elsewhere   |
| <i>Physical Sciences</i>                                      | RF10201<br>RF10202<br>RF10203<br>RF10204<br>RF10205<br>RF10299                                  | Astronomical sciences<br>Theoretical and condensed matter physics<br>Atomic, molecular, nuclear, particle and plasma physics<br>Acoustic and optical physics<br>Solid State physics<br>Other physical sciences not classified elsewhere   |
| <i>Chemical Sciences</i>                                      | RF10301<br>RF10302<br>RF10303<br>RF10304<br>RF10305<br>RF10399                                  | Physical chemistry (including theoretical and structural)<br>Inorganic chemistry<br>Organic chemistry<br>Analytical chemistry<br>Speciality Chemicals<br>Other chemical sciences not classified elsewhere   |
| <i>Earth Sciences</i>   | RF10401<br>RF10402<br>RF10403<br>RF10404<br>RF10405<br>RF10406<br>RF10499                       | Geology<br>Geophysics<br>Geochemistry<br>Oceanography<br>Hydrology<br>Atmospheric sciences<br>Other earth sciences not classified elsewhere   |
| <i>Information, Computer &amp; Communication Technologies</i> | RF10501<br>RF10502<br>RF10503<br>RF10504<br>RF10505<br>RF10506<br>RF10599                       | Information systems<br>Hardware<br>Software<br>Current information technology<br>Communication<br>Security system<br>Other information, computer & communication technologies not elsewhere classified  |
| <i>Applied Sciences and Technologies</i>                      | RF10601<br>RF10602<br>RF10603<br>RF10604<br>RF10605<br>RF10606<br>RF10607<br>RF10608<br>RF10699 | Aerospace technologies and engineering<br>Manufacturing and process technologies and engineering<br>Nuclear technology<br>Educational technology<br>Resource-based industry<br>Energy industry<br>Industrial design<br>Water technology<br>Other applied sciences and technologies not elsewhere classified |

|                                    |   |   |
|------------------------------------|---|---|
| <b>Engineering Sciences</b>        | RF10701<br>RF10702<br>RF10703<br>RF10704<br>RF10705<br>RF10706<br>RF10707<br>RF10708<br>RF10709<br>RF10710<br>RF10711<br>RF10799            | Mechanical and industrial engineering<br>Chemical engineering<br>Mining and mineral processing<br>Civil engineering<br>Electrical and electronic engineering<br>Agriculture Engineering<br>Food Engineering<br>Environmental Engineering<br>Nuclear engineering and radiation technology<br>Mechanisation and design engineering<br>Maritime Technology<br>Other engineering sciences not elsewhere classified  |
| <b>Biological Sciences</b>         | RF10801<br>RF10802<br>RF10803<br>RF10804<br>RF10805<br>RF10806<br>RF10807<br>RF10808<br>RF10899   | Biochemistry<br>Genetics and molecular biology<br>Microbiology<br>Botany<br>Zoology<br>Ecology<br>Genetic engineering<br>Biotechnology<br>Other biological sciences not elsewhere classified  |
| <b>Agricultural Sciences</b>       | RF10901<br>RF10902<br>RF10903<br>RF10904<br>RF10905<br>RF10906<br>RF10907<br>RF10908<br>RF10909<br>RF10910<br>RF10999                       | Soil and water sciences<br>Crop and pasture production (including rice)<br>Horticulture (including plantation and fruit crops)<br>Animal production<br>Veterinary sciences<br>Forestry sciences<br>Fisheries sciences<br>Food and nutrition development<br>Aquaculture<br>Plant physiology<br>Other agricultural sciences not elsewhere classified  |
| <b>Medical and Health Sciences</b> | RF11001<br>RF11002<br>RF11003<br>RF11004<br>RF11005<br>RF11006<br>RF11007<br>RF11008<br>RF11009<br>RF11010<br>RF11011<br>RF11012<br>RF11099 | Immunology<br>Medical biochemistry and clinical chemistry<br>Medical microbiology<br>Pharmacology<br>Physiology<br>Neurosciences<br>Clinical sciences<br>Public health, environmental & occupational health & safety research<br>Nutrition (public health research)<br>Health services research (including biethics)<br>Health care system, industries and technologies.<br>Pharmaceutical industry<br>Other medical and health services not elsewhere classified |
| <b>Environmental Sciences</b>      | RF11101<br>RF11102  | Environmental studies<br>Environment technology/industry  |



|                          |   |  |
|--------------------------|---|--|
|                          | RF11103<br>RF11104<br>RF11199                       | Environmental issues and assessment<br>Environmental management and bioremediation<br>Other environmental science not elsewhere classified               |
| <i>Material Sciences</i> | RF11201<br>RF11202<br>RF11203<br>RF11204<br>RF11299 | Electronic materials<br>Functional materials<br>Polymeric materials<br>New materials and technologies<br>Other material science not elsewhere classified |
| <i>Marine Sciences</i>   | RF11301<br>RF11302<br>RF11303<br>RF11304<br>RF11399 | Marine biology<br>Algae biotechnology<br>Fishing technology<br>Marine chemistry<br>Other marine sciences not elsewhere classified                        |

| DIVISION 2      |         | SOCIAL SCIENCES AND HUMANITIES                 |  |
|-----------------|---------|--|--|
| CATEGORY        | GROUP   |  |  |
| Social Sciences | RF20101 | Accounting                                     |  |
|                 | RF20102 | Economics                                      |  |
|                 | RF20103 | Management studies                             |  |
|                 | RF20104 | Political sciences and public policy           |  |
|                 | RF20105 | Architecture and habitat                       |  |
|                 | RF20106 | Sociology                                      |  |
|                 | RF20107 | Archaeology and history                        |  |
|                 | RF20108 | Geography                                      |  |
|                 | RF20109 | Population studies                             |  |
|                 | RF20110 | Law  |  |
|                 | RF20111 | Psychology                                     |  |
|                 | RF20112 | Education                                      |  |
|                 | RF20113 | Media and communications studies               |  |
|                 | RF20114 | Finance  |  |
|                 | RF20115 | Anthropology                                   |  |
|                 | RF20116 | Transportation studies                         |  |
|                 | RF20117 | Emerging issues                                |  |
|                 | RF20118 | Technology management                          |  |
|                 | RF20119 | Tourism  |  |
|                 | RF20199 | Other social sciences not elsewhere classified |  |
| Humanities      | RF20201 | Languages and literature                       |  |
|                 | RF20202 | Historical and civilisation studies            |  |
|                 | RF20203 | Philosophy                                     |  |
|                 | RF20204 | Arts and culture                               |  |
|                 | RF20205 | Religious studies                              |  |
|                 | RF20206 | Dances   |  |
|                 | RF20207 | Music  |  |
|                 | RF20299 | Other humanities not elsewhere classified      |  |

#### APPENDIX B: SOCIO-ECONOMIC OBJECTIVE(SEO) CLASSIFICATIONS

Choose the SEO classification which most appropriately describes the sector of the national economy which will be the main beneficiary or the R&D you are practising.

| <b>DIVISION 1</b> | <b>DEFENCE</b>             |  |
|-------------------|----------------------------|--|
| <b>CATEGORY</b>   | <b>GROUP</b>               |  |
| <i>Defence</i>    | S10101<br>S10102<br>S10199 | Defence<br>Defence Equipment<br>Other defence not elsewhere classified |

| <b>DIVISION 2</b>                                    | <b>ECONOMIC DEVELOPMENT</b>  |   |
|--|--|---|
| <b>CATEGORY</b>                                      | <b>GROUP</b>   |   |
| <i>Plant Production and Plant Primary Products</i>   | S20101<br>S20102<br>S20103<br>S20104<br>S20105<br>S20106<br>S20199           | Field crops<br>Plantation crops<br>Horticultural crops<br>Forestry<br>Primary products from plants<br>By-product utilisation<br>Other plant production and plant primary products not elsewhere classified.   |
| <i>Animal Production and Animal Primary Products</i> | S20201<br>S20202<br>S20203<br>S20204<br>S20299                               | Livestock<br>Pasture, browse and fodder crops<br>Fisheries products<br>Primary & by-products from animals<br>Other animal production and animal primary products not elsewhere classified   |
| <i>Mineral resources (excluding energy)</i>          | S20301<br>S20302<br>S20304<br>S20399   | Exploration<br>Primary mining and extraction processes<br>First stage treatment of ores and minerals<br>Other mineral resources (excluding energy) not elsewhere classified   |
| <i>Energy resources</i>                              | S20401<br>S20402<br>S20403<br>S20404<br>S20405<br>S20499                     | Exploration<br>Mining and extraction<br>Preparation and supply of energy source materials<br>Non-conventional energy resources<br>Nuclear Energy<br>Other energy resources not elsewhere classified   |
| <i>Energy supply</i>                                 | S20501<br>S20502<br>S20503<br>S20504<br>S20505<br>S20599                     | Energy transformation<br>Renewable energy<br>Energy distribution<br>Conservation and efficiency<br>Energy Issues<br>Other energy supply not elsewhere classified  |
| <i>Manufacturing</i>                                 | S20601<br>S20602<br>S20603<br>S20604<br>S20605<br>S20606<br>S20607<br>S20608 | Processed food products and beverages<br>Fibre processing and textiles, footwear and leather products<br>Wood, wood products and paper<br>Human pharmaceutical products<br>Veterinary pharmaceutical products<br>Agricultural chemicals<br>Industrial chemicals and related products<br>Basic metal products (including smelting) |

|   |  |  |
|---|--|--|
|   | S20609<br>S20610<br>S20611<br>S20612<br>S20613<br>S20614<br>S20615<br>S20616<br>S20617<br>S20618<br>S20619<br>S20620<br>S20699 | Industrial mineral products<br>Fabricated metal products<br>Transport equipment<br>Computer hardware and electronic equipment<br>Communication equipment<br>Instrumentation<br>Machinery and equipment<br>Latex product industry<br>Established manufacturing practices supporting technologies<br>Materials performance and processes/ analysis<br>Milling and process materials<br>Synthesis and design of fine and speciality chemicals<br>Other manufactured products not elsewhere classified |
| <b>Construction</b>                           | S20701<br>S20702<br>S20703<br>S20704<br>S20799   | Planning<br>Design<br>Construction processes<br>Building management and services<br>Other construction not elsewhere classified  |
| <b>Transport</b>                              | S20801<br>S20802<br>S20803<br>S20899   | Ground transport<br>Water transport<br>Air & space transport<br>Other transport not elsewhere classified   |
| <b>Information and Communication Services</b> | S20901<br>S20902<br>S20903<br>S20999   | Computer software and services<br>Information services (including library)<br>Communication services<br>Other Information and communication services not elsewhere classified  |
| <b>Commercial Services</b>                    | S21001<br>S21002<br>S21003<br>S21004<br>S21005<br>S21099   | Electricity, gas and water services and utilities<br>Waste management and recycling<br>Wholesale and retail trade<br>Finance, property and business services<br>Tourism<br>Other commercial services not elsewhere classified  |
| <b>Economic Framework</b>                     | S21101<br>S21102<br>S21103<br>S21104<br>S21105<br>S21106<br>S21107<br>S21108<br>S21109<br>S21199                               | Macroeconomics issue<br>Microeconomics issues<br>International trade issues<br>Management and productivity issues<br>Measurement standards and calibration services<br>Commercialisation<br>Socio-economic development<br>Economic development and environment<br>Human resource management<br>Other economic issues not elsewhere classified  |
| <b>Natural Resources</b>                      | S21201<br>S21202<br>S21203<br>S21204<br>S21205<br>S21006<br>S21299   | Soil resources<br>Water resources<br>Biodiversity<br>Bioactive product<br>Industrial raw materials<br>Mineral resource<br>Other natural resources not elsewhere classified   |

| CATEGORY   | GROUP  |  |
|--|--------|--|
| <i>Health</i>                                    | S30101 | Clinical (organs, diseases and conditions)                               |
|  | S30102 | Public health  |
|  | S30103 | Health and support services  |
|  | S30199 | Other health not elsewhere classified                                    |
| <i>Education and Training</i>                    | S30201 | Early childhood and primary education                                    |
|  | S30202 | Secondary education  |
|  | S30203 | Tertiary education   |
|  | S30204 | Technical and further education  |
|  | S30205 | Special education  |
|  | S30206 | Computer base teaching and learning                                      |
|  | S30207 | Education policy   |
|  | S30208 | Teaching   |
|  | S30209 | Educational administration   |
|  | S30299 | Other education and training not elsewhere classified                    |
| <i>Social Development and Community Services</i> | S30301 | Community services   |
|  | S30302 | Public services  |
|  | S30303 | Art, sport and recreation  |
|  | S30304 | International relations  |
|  | S30305 | Ethical issues   |
|  | S30306 | Nation building  |
|  | S30307 | Urban issues   |
|  | S30399 | Other social development and community services not elsewhere classified |

| DIVISION 4                                  |        | ENVIRONMENT   |
|---|--------|---|
| CATEGORY                                    | GROUP  |   |
| <i>Environmental Knowledge</i>              | S40101 | Climate and atmosphere  |
|   | S40102 | Ocean   |
|   | S40103 | Water   |
|   | S40104 | Land  |
|   | S40105 | Nature conservation   |
|   | S40106 | Social environment  |
|   | S40107 | River   |
|   | S40199 | Other environmental knowledge not elsewhere classified            |
| <i>Environmental Aspects of Development</i> | S40201 | Plant production and plant primary products (including forestry)  |
|   | S40202 | Animal production and animal primary products (including fishing) |
|   | S40203 | Mineral resources (excluding energy)                              |
|   | S40204 | Energy resources  |
|   | S40205 | Energy supply   |
|   | S40206 | Manufacturing   |
|   | S40207 | Construction  |
|   | S40208 | Transport   |
|   | S40209 | Information and communication services                            |
|   | S40210 | Commercial services   |
|   | S40211 | Environmental economic framework                                  |
|   | S40299 | Other environment aspect of development not elsewhere classified  |
| <i>Environmental</i>                        | S40301 | Environmental management  |

|   |                                 |  |
|---|---------------------------------|--|
| <i>Management &amp;<br/>Other Aspects</i>                     | S40302<br>S40399                | Waste management and recycling<br>Other environmental aspects not elsewhere classified |
| <b>DIVISION 5</b>   | <b>ADVANCEMENT OF KNOWLEDGE</b> |  |
| <b>CATEGORY</b>   | <b>GROUP</b>                    |  |
| <i>Natural Sciences,<br/>Technologies and<br/>Engineering</i> | S50101                          | Mathematical sciences  |
|   | S50102                          | Physical sciences  |
|   | S50103                          | Chemical sciences  |
|   | S50104                          | Earth sciences   |
|   | S50105                          | Information, computer and communication technologies                                   |
|   | S50106                          | Applied sciences and technologies  |
|   | S50107                          | Engineering sciences   |
|   | S50108                          | Biological sciences  |
|   | S50109                          | Agricultural sciences  |
|   | S50110                          | Medical and health sciences  |
|   | S50111                          | Multimedia   |
|   | S50199                          | Other natural science, technologies and engineering not elsewhere classified           |
| <i>Social Sciences<br/>and Humanities</i>                     | S50201                          | Social sciences  |
|   | S50202                          | Humanities   |
|   | S50203                          | Cyberlaw   |
|   | S50299                          | Other social sciences and humanities not elsewhere classified                          |

