ANNUAL REPORT

1994

CSIR

TECHNOLOGY IMPACT

C S I R

CSIR Annual Report 1994

Mission Statement

The CSIR's business is to perform research and development to gain technology and thereafter ensure its implementation in order to:

- be the technology partner of South African industry in both the formal and informal sectors to promote economic growth –

  Technology for Competitiveness

- provide technology solutions that improve the quality of life in urban and rural developing communities –

  Technology for Development

- provide scientific and technological support to enhance decision-making in the public and private sectors –

  Technology for Decision-making

Contents

Chairman's Review 2

The CSIR Board 3

CSIR Highlights 4

Annual Financial Statements 7

A summary of the Executive Report is available in the other official South African languages on request from:

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Chairman's Review

Mr P du P Kruger
Chairman

The CSIR, under the leadership of its management team, and headed by its dynamic President, Dr Brian Clark, has been transformed in just a few short years from a mostly government-supported organisation into an enterprise which has achieved better than fifty per cent self-sufficiency through contract service to industry. On behalf of the Board, I would like to congratulate the staff of the CSIR on their achievements and thank them for their efforts.

In the year under review, the Board welcomed Dr Ivy Matsepe-Casaburri to its ranks. It has already profited from her wisdom and special insight.

In 1994, South Africa underwent a total political transformation and achieved full democracy. Our first completely democratic election process, which was substantially free and fair, was a huge success by any standards. South Africa's new President, Mr Nelson Mandela, was inaugurated shortly thereafter and the new Government structure was announced. At the time of writing it has not been finally decided with which Government Department the CSIR will be aligned. What is clear, however, is that the CSIR at present works under contract to 14 Departments. The creation of a Department of Arts, Culture, Science and Technology is an important step forward in the development of South Africa's science and technology system. We look forward to working closely with the Government of National Unity in achieving its objectives through its Reconstruction and Development Programme.

The CSIR was created to serve South Africa's science and technology needs, and will continue to carry out this mandate. The results of an evaluation by an ANC-appointed IDRC (International Development

Dr JB Clark
President

Mr L Boyd

Mr JC Hall

Dr LB Knoll

Research Centre of Canada) commission within the context of national priorities showed the CSIR mostly in a favourable light. Where the study revealed areas that needed attention, the CSIR subsequently set processes in motion to redirect resources to address these shortcomings.

The CSIR will serve South Africa in two major areas. One is the development area, which includes small, medium and micro enterprises in both the formal and disadvantaged sectors of the community. The other area is industry, where technologies are employed to enable it to be more interna-

Chairman's Review

The CSIR Board

tionally competitive. The CSIR has been restructured over the past six years and is well placed to meet the needs of the country as far as these two main focus areas are concerned. The socio-economic aspirations of all South Africans can only be met in the long term by the creation of jobs and wealth made possible by a growing economy. Science and technology have key roles to play in achieving these national goals.

South Africa's acceptance by the international community will expose all sectors of the economy to powerful global competitive forces. South African companies will be competing to an increasing extent in the supply of goods and services and for the acquisition of capital. We face the challenge of attracting investment and avoiding economic stagnation, while at the same time competing with global players beyond our borders in the rest of the developing world.

r I F Matsepe-Casaburri | Mr RA Plumbridge | Dr GS Sibiya | Mr E van As | Mr WC van der Merwe | Dr WP Venter

A wave of technological development is sweeping the world. The winning nations are those that have been able to harness the full potential of their technological capabilities. Information and communications technologies are radically changing the way in which we interact, acquire our information and go about our business. Biotechnology and other new technologies are creating new marvels that will penetrate deeply into the fabric of society.

As a technology provider to the nation, the CSIR ensures that technology support is given to enterprises of all sizes to enhance their competitiveness; it provides decision-makers with information structured so as to enable them to improve the quality of their decision-making; and it ensures that communities have access to technology that will enable them to extract maximum value from constrained resources. The CSIR has positioned itself to play a leading role in all these processes. The Executive Report describes these processes and the operational aspects in some detail.

P du P Kruger
Chairman

CSIR HIGHLIGHTS

SOME STATISTICS IN 1994

- The CSIR is the largest industry- and community-directed research and development organisation in Africa with some 2 800 scientists, engineers and support staff.
- The CSIR undertakes between 8% and 10% of all research and development in Africa.
- 55 – 60% of the CSIR's financial turnover is derived from contract income.

4-STAR NOSA RATING

The CSIR maintained its current high performance in terms of occupational safety with a Four-Star NOSA rating. The disabling injury rate is under 5, which is on a par with the best in industry. The Occupational Safety function has been broadened to incorporate environment and health to ensure a holistic approach, and to be in line with international environment, health and safety standards.

OUTSTANDING ACHIEVERS

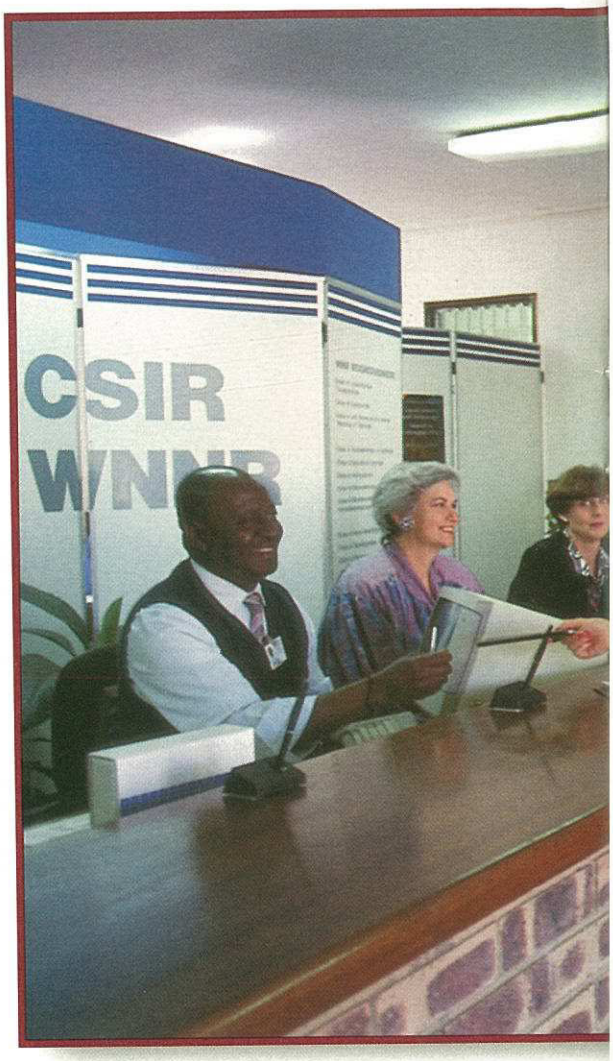
Six CSIR staff members were acknowledged as the CSIR's Outstanding Achievers for 1993. Awards went to Carol o'Brien, Dr Neville Comins, Willem Botha, Johan le Roux, Les Sampson and Gerhard Smith. They were honoured for their work in fields as diverse as the management of the CSIR's Conference Centre, speciality metals, space technology, textile technology for disadvantaged communities and the development of business opportunities for the organisation.

VISITORS TO THE CSIR DURING 93/94

The Reception Offices on the main CSIR site handled 144 356 visitors.

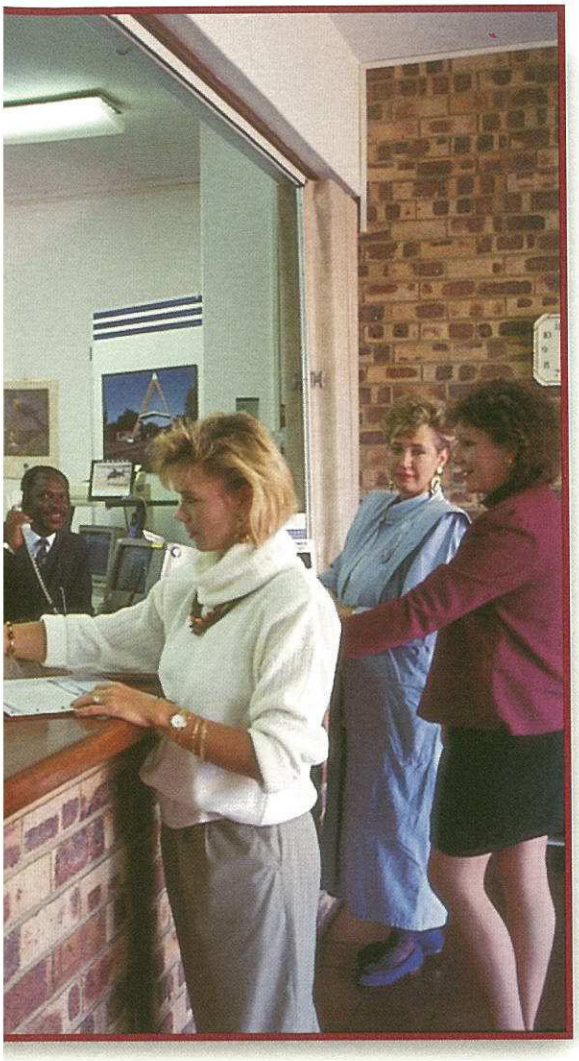
Among the groups of organised visits to the CSIR were delegations from Japan, the UK, USA, Germany, Australia, the Czech Republic, Republic of China, Holland, France and Uruguay. There were a number of visitors from Mozambique, Zambia, Mauritius, Morocco, Botswana and other African countries.

Local groups of visitors included those from many schools, technikons and universities, local industry, FABCOS and NAFCOC. The Black Scientists Indaba and the Youth Science Olympiad winners also visited the CSIR.



FINANCIAL HIGHLIGHTS

(R'million)	4 year COMPOUND GROWTH	Annual GROWTH %	1994
31 MARCH			
TURNOVER	7	17	492
PARLIAMENTARY GRANT	4	17	240
EXTERNAL CONTRACT INCOME	12	20	251
Private sector	31	63	134
Public sector	(8)	(10)	55
Defence sector	2	(2)	52
Other sectors (including Africa)	50	(23)	10
ROYALTIES	(38)	(80)	1
TURNOVER/ MANPOWER COST		14	1,89

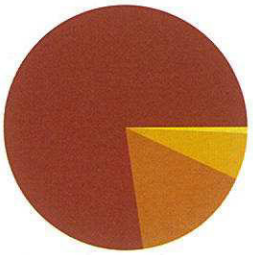


C S I R

CSIR HIGHLIGHTS

STAKEHOLDER RESPONSE

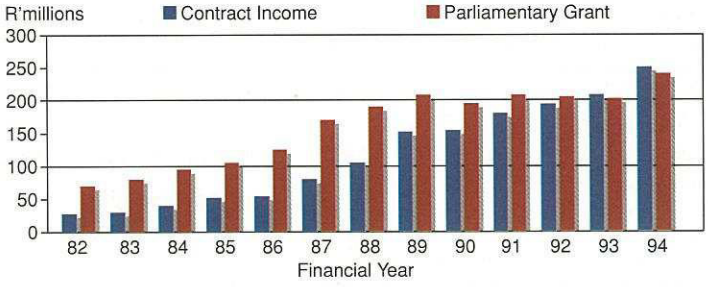
Major Positive	77%
Minor Positive	16%
Don't Know	6%
No contribution	1%



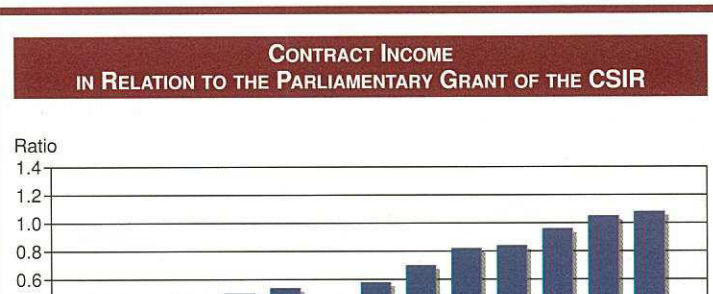
THE CSIR'S CONTRIBUTION TO THE COUNTRY

The CSIR strives to service its clients'/customers' needs with continually higher levels of satisfaction. The views of the organisation's clients, customers and other stakeholders are extremely important in evaluating its performance and relevance to its customer/client network. During the past financial year, the CSIR, in a formal random selection survey, asked over 1 200 of its stakeholders, "What contribution do you believe the CSIR will make to the new South Africa?" The result is given alongside.

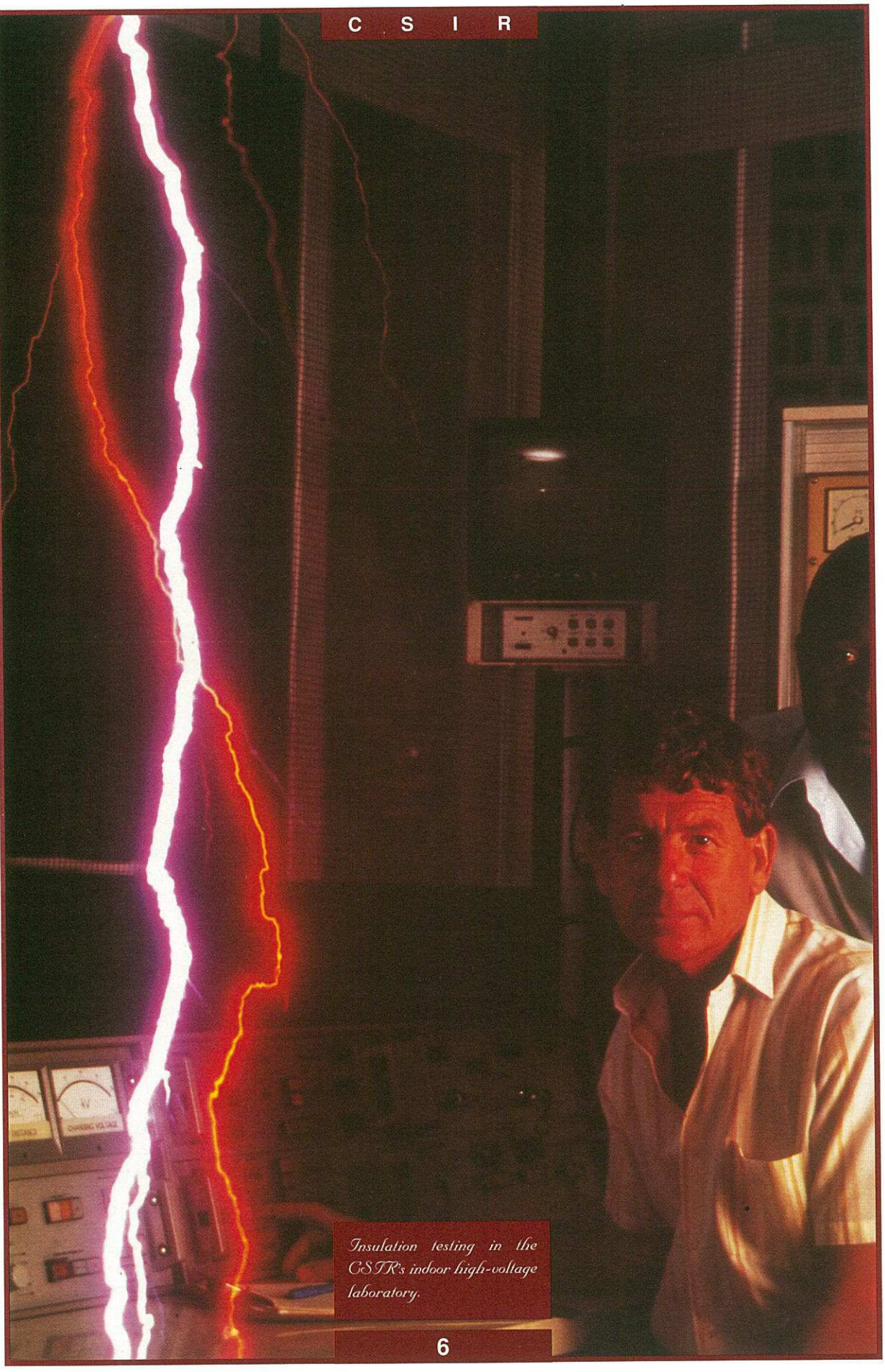
CONTRACT INCOME AND THE PARLIAMENTARY GRANT OF THE CSIR



CONTRACT INCOME IN RELATION TO THE PARLIAMENTARY GRANT OF THE CSIR



Annual GROWTH %	1993	Annual GROWTH %	1992	1991
2	419	4	411	397
(2)	205	(1)	210	212
6	209	9	197	181
8	82	29	76	59
(9)	61	(4)	67	70
2	53	6	52	49
550	13	(33)	2	3
25	5	—	4	4
(7)	1,66	(3)	1,79	1,84



Insulation testing in the CSIR's indoor high-voltage laboratory.

C S I R

ANNUAL FINANCIAL STATEMENTS

Auditor-General's Report 8

Executive Report 9

Income Statement 21

Balance Sheet 22

Cash Flow Statement 23

Notes to the Cash Flow Statement 24

Notes to the Annual Financial Statements 25

C S I R

AUDITOR-GENERAL'S REPORT

Report to Parliament by the Auditor-General on the annual financial statements of the CSIR for the financial year ended 31 March 1994

1. ***Audit assignment:*** The group annual financial statements of the CSIR set out in Statements 1 to 3 and the Notes thereto have been audited in terms of the provisions of section 5 of the Auditor-General Act, 1989 (Act No. 52 of 1989), read with section 14(1) of the Scientific Research Council Act, 1988 (Act No. 46 of 1988). These financial statements as well as the maintenance of effective control measures are the responsibility of the President of the CSIR. My responsibility is to report on these financial statements, as well as the matters set out in the first-mentioned Act.

2. ***Regularity audit***

   (1) **Financial:**

   (a) *Nature and scope:* The audit was carried out in accordance with generally accepted government auditing standards. These standards require the audit to be planned and performed so as to obtain reasonable assurance that, in all material respects, fair presentation is achieved in the financial statements. An audit includes an evaluation of the appropriateness of the accounting policies, an examination, on a test basis, of evidence supporting the amounts and disclosures included in the financial statements, an assessment of the reasonableness of significant provisions and a consideration of the appropriateness of the overall presentation of the financial statements. I consider that the audit procedures were appropriate in the circumstances to enable me to express the opinion presented below.

   (b) *Audit opinion:* In my opinion these financial statements fairly present the financial position of the CSIR and the group as at 31 March 1994, and the results of their activities and cash flow information for the year then ended in accordance with generally accepted accounting practice.

   (2) **Compliance:** Compliance with the appropriate legislation was audited on a test basis.

   (3) **Audit observations:**

   (a) *Internal checking and control:* With reference to paragraph 2(2)(a) page 47 of the previous Auditor-General's Report, Management have taken positive steps to rectify the weaknesses in the systems of internal checking and control generally.

   However, a review during 1993-94 of the Project Management System revealed that although the system provides for adequate controls in most instances, the administrative procedures related to the functioning of the system have not yet been fully and effectively implemented by project and financial managers and the controls could thus not be relied upon for audit purposes. An alternate audit approach was therefore adopted, which enabled me to express an unqualified opinion.

   This matter was brought to the attention of Management and the effectiveness of improvements will be evaluated in due course.

   (b) *Unutilised office accommodation:* The situation regarding surplus accommodation as reported in paragraph 2(2)(b) page 48 of the previous Report remains unchanged. According to the CSIR constant efforts are made to utilise the surplus accommodation effectively.

3. ***Appreciation***

   I should like to express my appreciation of the courtesy extended and assistance rendered by the staff of the CSIR during the audit.

G R Witthöft
for Auditor-General

Pretoria
June 1994

C S I R

EXECUTIVE REPORT

ORGANISATIONAL CONTEXT

The CSIR is a statutory research council governed by the Scientific Research Council Act (Act 46 of 1988). Owned by the State, and therefore by the people of South Africa, its objectives are spelt out in its Act as follows:

"The objects of the CSIR are, through directed and particularly multi-disciplinary research and technological innovation, to foster, in the national interest and in fields which in its opinion should receive preference, industrial and scientific development, either by itself or in co-operation with principals from the private or public sectors, and thereby to contribute to the improvement of the quality of life of the people of the Republic, and to perform any other functions that may be assigned to the CSIR by or under this Act".

The Act makes provision for the affairs of the CSIR to be managed by a Board appointed by the Minister responsible for administering the Act. The Board appoints a President and an Executive Management Board, who are responsible for the management of the affairs of the CSIR in accordance with the policy and objectives set by and subject to the directives and control of the Board. The Board members are: Mr P du P Kruger (Chairman), Mr L Boyd, Mr J C Hall, Dr L B Knoll, Dr I F Matsepe-Casaburri, Mr R A Plumbridge, Dr G S Sibiya, Mr E van As, Mr W C van der Merwe, Dr W P Venter and Dr J B Clark. Reporting to Parliament is done by means of an annual report.

Dr JB Clark
PRESIDENT

The CSIR was listed as a public entity with effect from 1 April 1993 in terms of the Reporting by Public Entities Act (Act 93 of 1992) and Management have taken the necessary steps to comply with the requirements of the Act.

THE ENVIRONMENT WITHIN WHICH THE CSIR MUST FUNCTION

The first fully democratic election in our history has taken place and South Africa now stands on the brink of a new era. The reassessment of national priorities will create new challenges and make new demands on the CSIR. Every organisation will be called upon to assist in the process of reconstruction and development of all aspects of our society. The CSIR stands ready, and is well prepared, to make its special contribution in these exciting times.

For most South Africans, the election process was a life-altering experience. The pervasive joy and concomitant relaxation of tensions and reduction of violence, plus a new spirit of "let's make the new South Africa work", are evident everywhere. We fully expect subsequent social and political changes to enable our efforts to contribute positively towards building a new nation. In reporting on the highlights of our achievements of the past financial year, attention has been paid to that significant component of our work which is directed at existing business imperatives, but also to the signifi-

Developed by the CSIR, an all-composite two-seater turbo-prop aircraft.

cant effort we have made in preparing the organisation for the future.

THE NATIONAL POLICY AND ITS INFLUENCE ON THE CSIR'S ACTIVITIES

In addition to the Scientific Research Council Act, the activities of the CSIR are at present determined by two other policy documents:

(i) The science policy and system of the Republic of South Africa – **NATED 11-005 (88/06)**.

(iii) A system of framework autonomy for scientific councils – **NATED 11-007 (88/04)**.

Since much has been said about the deficiencies of the existing policy framework and science system, some core policies need to be expounded in order to clarify matters and obviate misunderstandings. During the past six years, the CSIR and other research councils have been required to:

(a) Do more contract research and development work for the private and public sectors in a "needs-driven" client/contractor manner. This approach, which is fully in line with international trends, was designed to establish a science council system which was considerably more responsive to meeting users' needs than in the past.

In responding to these specific challenges, the CSIR's achievements are noteworthy:

- The CSIR's external income has grown over the past eight years from R61,8 million (1985/86) to R251,3 million in 1993/94, or from 33,8% of turnover to 51,1% of turnover. During this period the share of external income generated from the private sector grew from R12,5 million (20,2%) to

FIGURE 1

CSIR PARLIAMENTARY GRANT AND EXTERNAL INCOME

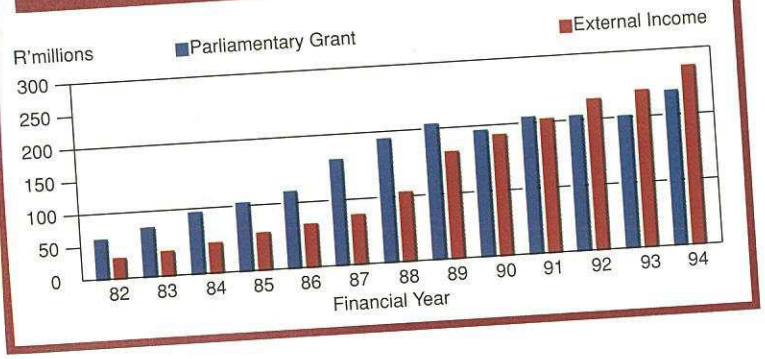


FIGURE 2

GROWTH IN NUMBER OF EXTERNAL CUSTOMERS

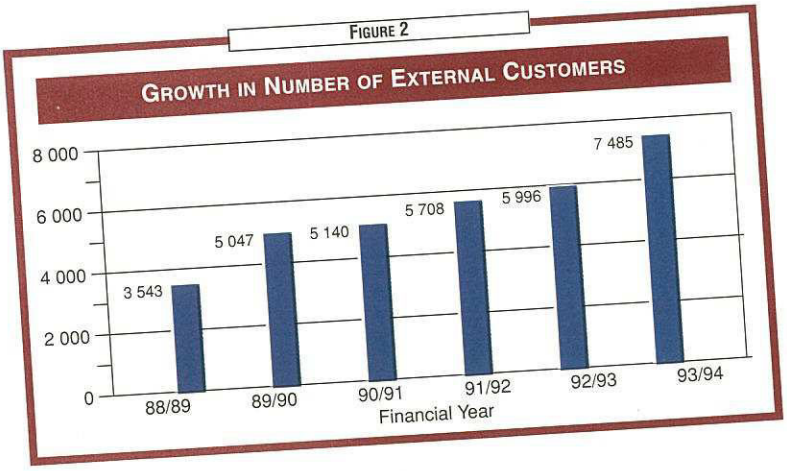
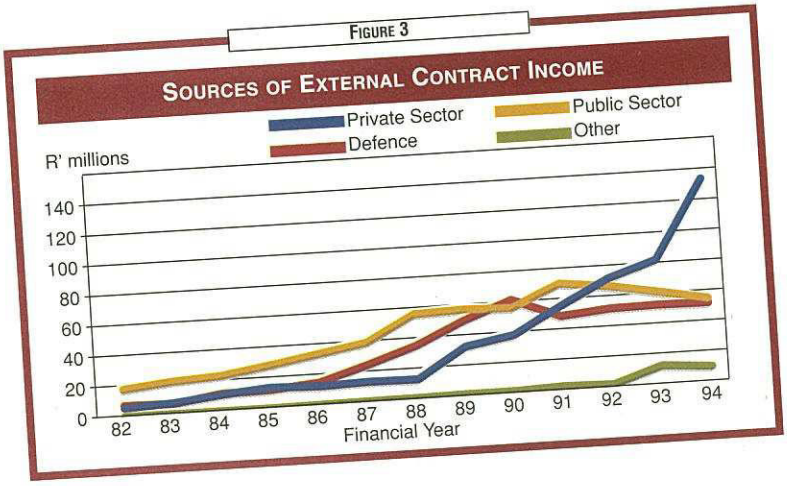


FIGURE 3

SOURCES OF EXTERNAL CONTRACT INCOME



R134,0 million (53,5%) in 1993/94. The total for 1992/93 was R82,4 million (39,5%).

- Two major market sectors for contract research were government departments and defence. In spite of major cutbacks in both sectors, the CSIR achieved contract figures of R55,2 million (R61,3 million in 1993) and R52,1 million (R52,7 million in 1993) respectively, which compares well with the previous year's figures, despite a declining market trend.

(b) Generate a balance of activities designed on the one hand to meet immediate needs (paid for by the user or customer) but at the same time to develop research capacity and expertise in order to respond effectively to the future needs of all their stakeholders. To make the latter activity at all possible, it was accepted when the policies were devised that Government was the only significant source of investment funds. The Parliamentary Grant was therefore viewed primarily as an investment to create research and development capacity. This principle is well established in international practice.

In responding to this challenge, the CSIR created expertise in technology management in accordance with the best international practice. Significant investments were made in decision-making tools to manage investments in capacity-building research and development based on product/expertise life cycles, risk evaluation and return-on-investment. These tools include computer-based decision-making systems for selecting capacity-creating projects with the best returns. They are supported by project management and financial systems integrated into the CSIR's management information systems. The extensive investment in training of our managers at all levels has made them capable of delivering value in both the short and longer term.

This comprehensive and detailed approach has greatly facilitated the prudent investment of the Parliamentary Grant. Indeed, our organisational approach in this area has attracted positive international attention. In spite of this, the view prevailed in some government departments (during the 1993/94 financial year) that these funds are merely a subsidy and therefore removable. It must be stated categorically that the nature of scientific research and development is such that South Africa's science and technology system will be seriously undermined without Government's on-going investment in building research and development capacity. Research and development capacity cannot be built up in a sporadic fashion, but requires a regular and steady commitment.

Performance measured against the CSIR's mission and organisational goals

The CSIR's performance is measured against a broad set of direct and indirect parameters. Staff alignment in support of the mission is essential if the organisation is to be effective.

In accordance with its mission and the framework of enabling policies, the CSIR carried out an increased number of projects for customers in the public and private sectors as shown in Figures 1, 2 and 3. Technology Impact, a companion volume to this report, presents a more comprehensive overview, but by way of illustration, some of the

The CSIR's mission

The CSIR's business is to perform research and development to gain technology and thereafter ensure its implementation in order to :

- be the technology partner of South African industry in both the formal and informal sectors to promote economic growth –

Technology for competitiveness

- provide technology solutions that improve the quality of life in urban and rural developing communities –

Technology for development

- provide scientific and technological support to enhance decision-making in the public and private sectors –

Technology for decision-making

EXECUTIVE REPORT

(CONTINUED)

highlights of the past financial year are described under the three headings as stated in the mission.

Technology for competitiveness

The CSIR continues to deliver technology that meets the needs of South African organisations in the formal sector of the economy. Most of this work is done in terms of the usual client/contractor agreements, with clients paying market-related fees for goods and services delivered to meet their own needs. In general, the competitiveness of industrial companies in international and local markets is boosted by the development of new and improved products, processes and services. Selected highlights of the past year in this area include:

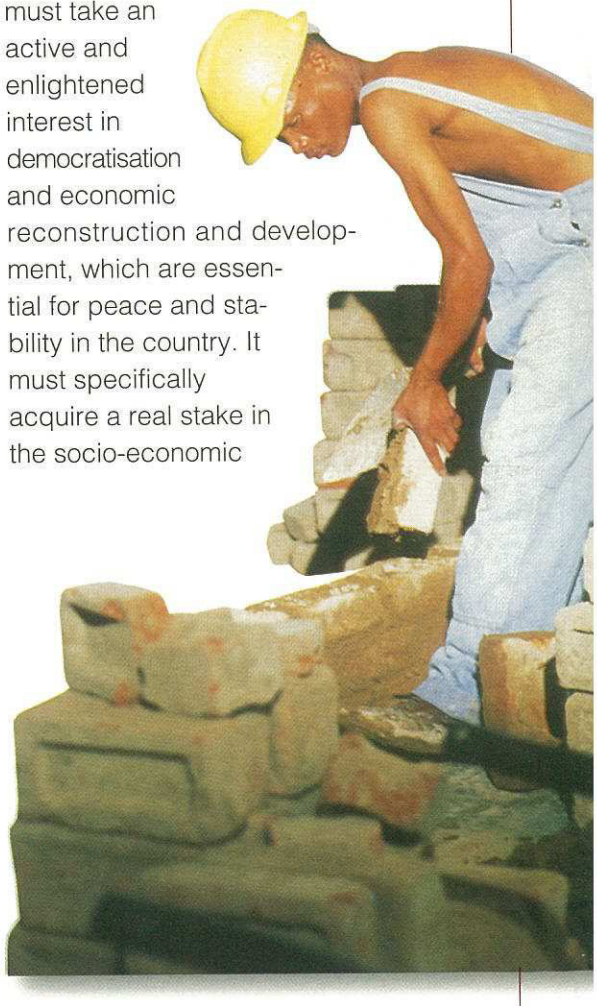
- In collaboration with the AEC the CSIR has developed the Kangela ash monitor, an accurate non-contacting and fast on-line instrument which measures coal quality to permit the continuous control of the ash content in mined coal.
- The commercialisation of the design of a low-cost electronic tagging system, Supertag, which is effectively a single integrated circuit capable of broadcasting its identity despite interference from other tags. Future applications may include the "reading" of the contents of an entire supermarket trolley by a single reader, thus eventually replacing bar coding, and simplified inventory control and logistics support. These and other applications will be developed over a number of years.
- In addition to its range of explosion-safe pressurised sulphurhexafluoride (SF_6) gas-insulated, high-voltage current transformers, the CSIR has developed a second product for combating the explosion hazard posed by oil-paper-insulated high-voltage equipment. Type tests on the range of SF_6 current transformers have been completed and the first units have been delivered to Eskom for field installation. These products are meant for new substations and the replacement of old oil-paper-insulated equipment.

In collaboration with the AEC, the CSIR has developed the Kangela on-line ash monitor to measure the ash content of coal.

The CSIR aims to surpass its previous efforts in this area and focus on technology for the manufacturing industry as part of the national drive to build a vibrant industrial manufacturing sector.

Technology for development

The CSIR must take an active and enlightened interest in democratisation and economic reconstruction and development, which are essential for peace and stability in the country. It must specifically acquire a real stake in the socio-economic



A number of the CSIR's strategic units have been involved in work for urban and rural communities.

development of South Africa's urban and rural communities.

The CSIR must apply a significant portion of its core strengths and competencies to projects aimed at combating poverty, disease and illiteracy – three fundamental ills which are at the root of social conflict and political instability.

A number of the CSIR's strategic units have been involved in work for urban and rural communities. During the past financial year, these efforts were intensified in accordance with changing national priorities. Investment of funds from the Parliamentary Grant in the area of technology for development is resulting in the creation of capabilities, experience and expertise in the strategic units and at corporate level. Recently, small, medium and micro enterprises (SMMEs) have been using the CSIR's services to an increasing extent, mainly in the form of packaged information and analytical services.

Highlights of the CSIR's work in technology for development during the past year include:

- The establishment of a multi-disciplinary task force to address the full range of infrastructural needs in informal settlements.
- The development of very low-cost, hygienically acceptable poultry abattoirs designed to satisfy the specific requirements of the community.
- The successful implementation of a three-phase knitting academy project to stimulate small and micro businesses in the Eastern Cape to assist potential entrepreneurs with technical, marketing and business management skills, and to provide them with training and support.

The CSIR's activities in this area have been guided by its Informal Settlements Advisory Group and its corporate programme, Technology for Developing Communities, which sources expertise from within the organisation and from outside. In particular, a report commissioned by the CSIR on international experience in this field was used to ensure that the requirements for affordability and sustainability of technology were met.

Technology for decision-making

The CSIR believes that, in these times of huge national challenges and constrained resources, sound decision-making based on high-quality information is at a premium. It has concentrated on packaging the products of science and technology into decision-making systems designed to aid decision-makers.

Some examples of tools to assist decision-making that have been developed by the CSIR in the past year include:

- A range of tools for rural and urban land-use and infrastructural planning that are of considerable value to decision-makers involved in the implementation of the Reconstruction and Development Programme. Various forms of spatially related data are integrated. Further value is added by modelling and the application of other specialist technical expertise to focus attention on crucial planning and resource allocation decisions. Alternative courses of action can be readily evaluated.

A comprehensive Environmental Impact Assessment study on the two proposed land-use alternatives for the eastern shores of Lake St. Lucia was released in March 1993 for public comment. The CSIR published a final report on 15 September 1993 in response to the comments received.

EXECUTIVE REPORT

(CONTINUED)

- The alignment of the methodologies used for the South African inventory of greenhouse gases in accordance with the guidelines of the Intergovernmental Panel on Climate Change.
- A comprehensive Environmental Impact Assessment study on the two proposed land-use alternatives for the eastern shores of Lake St Lucia. The CSIR's final report, in response to comments to the first report, as part of the EIA process, was released on 15 September 1993.

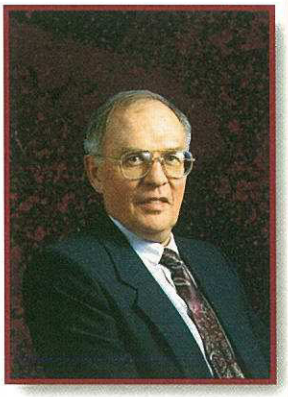
PERFORMANCE MEASURED AGAINST BOARD APPROVED CORPORATE GOALS

On-going assessment of performance against predetermined measures and targets is a key organisational value throughout the CSIR. Performance assessment ranges from the Board's evaluation of organisational performance in both the short term (one year) and the longer term, to the CSIR's regular performance-linked evaluation at all levels against agreed Key Results Areas (KRAs).

Each year the Board applies a set of short-term **Corporate Goals** to monitor organisational performance at a macro level.

Goal number 1:
Sales and finance

- **An external contract income target of R250 million was set,** and R251,3 million was realised.
- **A surplus before non-operational income and provisions of 2,4% of total turnover** was set as a target, with 3,8% being achieved.
- **The development of a standardised process for identifying and reducing non-project attributable costs had to be completed by September 1993.** A revised process which will enable these costs to be contained and reduced in future was developed and approved.



Dr DF Toerien
EXECUTIVE VICE-PRESIDENT: OPERATIONS

Goal number 2:
Innovation

The goal was to generate at least 10% of the CSIR's external income in 1993/94 from new products, processes and services launched during the 1992/93 and 1993/94 financial years. This objective was exceeded and a level of 13,4% was achieved.

Goal number 3:
Comparative benchmarking

The third goal was to develop high-quality organisational benchmarking processes that compare with the best in the world. This required the development of a cost-effective approach to benchmarking of organisational functions and entities relating to appropriate local and international organisations.

During 1993 an in-depth investigation into published benchmarking literature was conducted. Public and private sector laboratories in the United States which practise benchmarking were visited and selected conferences and seminars on benchmarking were attended. An assessment of these experiences indicated that the CSIR is not yet in a position to implement conventional benchmarking as it is practised internationally. A prerequisite for successful benchmarking is the entrenchment of the existing Strategic Quality Management (SQM) programme in the organisation. This has now been identified as a focus area.

Goal number 4:
Corporate strategic review

The fourth goal, which had to be achieved by September 1993, was a critical review of the CSIR's Corporate Strategic Review for presentation to and approval by the

EXECUTIVE REPORT

(CONTINUED)

Board in November 1993. The achievement of this goal involved the preparation of two key documents. The first document reviews the performance of the CSIR over the period 1991 to 1993, and the second develops the CSIR's strategic programme for the next five years. The contents of the documents are discussed below.

SUMMARY OF PERFORMANCE FROM A MARKET PERSPECTIVE

Its past work has enabled the CSIR to build up a network of customers and clients. The aim is to service their needs with increasingly higher levels of client/customer satisfaction. The views of the organisation's clients, customers and other stakeholders are, therefore, extremely important in the evaluation of its performance. During the past financial year, the CSIR received 1 276 solicited and approximately 1 200 spontaneous comments from its clients and stakeholders.

The CSIR uses two measurements as a gauge for its Customer Satisfaction Index:

- The benchmark, which is a biennial survey of a large number of CSIR stakeholders.
- The monitor, which is a six-monthly survey of a smaller sample.

The outcome of the 1993 benchmark survey, previously undertaken in 1991, revealed the following:

— The service attributes that clients consider most important are delivery of what is promised, meeting of deadlines, and confidentiality. These have not changed, indicating that the CSIR is correctly focused.

— Seventy-five per cent of the respondents felt that the CSIR has a critical role to play in the new South Africa.

— Ninety-six per cent of its clients would use the CSIR again and would recommend the CSIR to others.

Other studies confirmed that the CSIR's market responsiveness, supported by a media campaign, has succeeded in positioning the CSIR as "Your Technology Partner" with its existing stakeholders.

Mr MD Groch
EXECUTIVE VICE-PRESIDENT:
TECHNOLOGY FOR DEVELOPMENT

STRATEGIC REVIEW PROCESS – THE CSIR'S FUTURE DIRECTIONS

The huge changes expected in the environment within which the CSIR functions necessitated a fundamental review of its corporate strategy. In preparation for this, extensive internal and external reviews were undertaken. A study involving new stakeholders, including community leaders, SMME stakeholders and advisors was commissioned to assess their responses to education, science and technology, social reconstruction and development, and economic redistribution. Past perceptions and current expectations of the CSIR were tested in a survey which revealed that the CSIR is still largely perceived as a white male preserve and an instrument of government. Despite this, the

The CSIR is placing great emphasis on its skills improvement programmes.

respondents believed that the CSIR can and should play a major role in the practical application of science and technology to national needs, ranging from the upliftment of communities to maintaining links with international science and technology. These views, together with the responses of many other stakeholders, were crucial to the process of strategy revision.

Once the internal and external reviews had been completed, the CSIR's revised corporate strategy was submitted to and approved by the Board in November 1993. Some of the highlights of the strategy are presented in this report.

The improvement in the national spirit and the emergence of a new era, combined with the challenges already mentioned, point the way to great opportunities for providing technology for development, jobs and wealth creation. The CSIR's vision was refined and is stated as follows:

THE CSIR'S VISION

GROW THE CSIR'S CONTRIBUTION

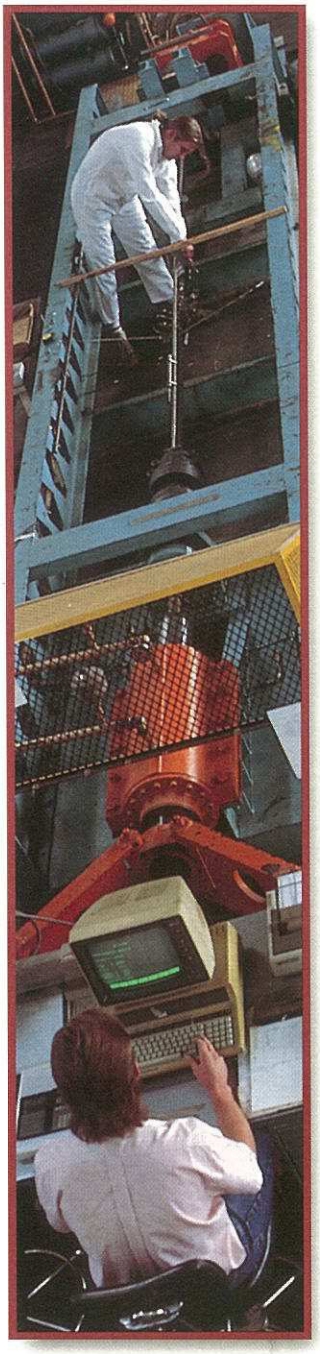
to the new South Africa through technology for development, jobs and wealth creation.

The CSIR's mission statement was judged to be appropriate and is retained in its present form.

In order to implement the revised corporate strategy, five focus areas were identified to ensure that management and staff remain directed in their efforts to achieve the CSIR's vision.

1. COMPETITIVENESS IN THE CSIR'S TRADITIONAL CORE BUSINESS

The CSIR's market focus is embodied in its portfolio of strategic units and the structures and activities within them. The strategic units and their staff are collectively the face that the CSIR presents to its markets. The organisation's major strength is the diversity of its scientific and technological expertise in its 12 strategic units. The CSIR aims to mobilise this expertise to provide comprehensive, cost-effective solutions which meet the needs of its customers and clients. The CSIR will retain its positioning as the technology partner of its customers and clients.



The CSIR's expertise in mine hoisting technology has contributed towards proposed new regulations on mine rope safety.

As an active player in the international arena, the CSIR will continue to serve as a funnel for appropriate international technology to South Africa. It will seek to form alliances with international sources of technology to ensure the efficient execution of such initiatives, and will industrialise and commercialise products and services selectively beyond the borders of South Africa. Current initiatives relating to technology for the manufacturing industry, the holistic Information Technology Strategy, and the integrated Management Information System will also be completed.

2. GREATER EMPHASIS ON TECHNOLOGY FOR DEVELOPMENT

Greater emphasis on technology for development signifies the strategic realignment of the CSIR. It is expected that the Government of National Unity will launch a national programme of socio-economic reconstruction and development in 1994. This will involve extensive investment in both capital and recurrent expenditure. The CSIR is well placed to provide scientific and technology-based decision support to policy formulators and decision makers in the context of the national pro-

EXECUTIVE REPORT

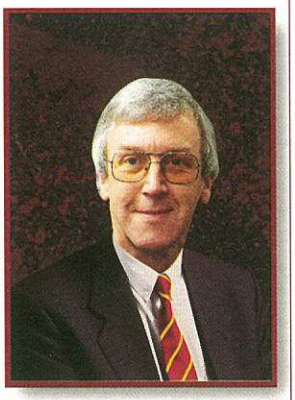
(CONTINUED)

gramme. Integration of the top-down development process embodied in the national programme, with the need for community participation, will require a multi-disciplinary and multi-institutional response, an inclusive and transparent process, and effective delivery of holistic solutions.

The challenges for the CSIR in dealing with development opportunities are a precise understanding of its role as a technology provider and the needs of its stakeholders, the development of new capabilities and business practices to interact effectively with the stakeholders, and the acquisition of different skills and expertise for functioning in this complex environment. The emphasis that the CSIR places on providing technology in this area signifies a strategic alignment to build capacity, expertise and new skills. Organisational resources are also being redirected towards further development of business relationships with small, medium and micro enterprises (SMMEs). There is a whole new spectrum of stakeholders whose needs and expectations must be addressed and with whom the CSIR will strengthen relations. A CSIR executive vice-president has been assigned specific responsibility for this task.

3. CREATING A QUALITY ORGANISATION

The CSIR recognises that if it is to prosper and grow as a player in the global arena, it will have to ensure greater value of the products, processes and services delivered to its markets. One of the consequences of the new order will be the presence of aggressive international competitors. If the organisation is to achieve higher levels of value, quality management must be an integral part of all its business processes and actions of its staff. A Strategic Quality Management (SQM) programme will be implemented to achieve this end, and will improve the CSIR's productivity and sustain its growth and financial integrity.



Dr GG Garrett
EXECUTIVE VICE-PRESIDENT: OPERATIONS

4. EMPOWERMENT OF FIRST-LINE LEADERSHIP

The CSIR's first-line leadership, including technical specialists, as the key players who ensure excellence in all aspects of the CSIR's operations, need to be fully empowered to fulfil the demands on them effectively and efficiently. Special emphasis will be given to this area.

5. AFFIRMATIVE ACTION

As an equal opportunity employer, the CSIR does not discriminate on the basis of gender, race or creed, and recognises the need to draw upon the diverse talents of our society. It will therefore build on past successes and align its Affirmative Action Programme with the special needs of black and female South Africans. More opportunities will be created for them at the core of the CSIR's business to meet the challenges of democratisation, economic recovery, growth and development. The CSIR's executive and top management remain the custodians of its Affirmative Action Programme. This will ensure that the Programme continues to address both the needs of previously disadvantaged sectors of our community and the skills and quality requirements of the organisation. The greater strategic emphasis on developing communities and small, medium and micro enterprises offers a unique opportunity for accelerating the CSIR's current

EXECUTIVE REPORT

(CONTINUED)

affirmative action initiatives, which will be vigorously pursued.

ACQUISITION ONE YEAR ON

As from April 1993 the CSIR took over full operational responsibility for the Chamber of Mines Research Organisation (COMRO) as a fully fledged CSIR strategic unit, now the Division of Mining Technology (Miningtek). In the 1993/94 financial year, Miningtek's contract income exceeded R42 million. With a staff complement of over 200, it services both the gold and coal mining industries primarily in the key areas of health and safety and profitability.

The first year of the new division's operations has been characteristic of a typical merger situation demanding, amongst other things, close attention to ongoing staff and customer confidence, its business focus and the development of a long-term strategy, and the introduction of systems designed to harness the potential synergy with many other CSIR divisions. The Research Liaison Committee of the Chamber of Mines and their research advisor have been instrumental in cementing special relationships with key stakeholders and customers which bodes well for the future.

STRUCTURAL CHANGE

Prospective reductions in State funding and the rapid changes in the economic and political climate in the country caused the CSIR to seriously re-evaluate its role in the energy field during the latter half of 1993.

A detailed study was made of the medium- to long-term future of the CSIR's Division of Energy Technology in relation to the considerable energy-related research, development and implementation activities in a number of other CSIR divisions.

A pavement study was done for the California Department of Transport to assess the efficacy of thin-layer bitumen-rubber asphalt.

The study led to the recommendation that the CSIR should maintain, and indeed develop, its activity in the energy field, but should redeploy the resources (people and facilities) of its Division of Energy Technology in other CSIR divisions. It also recommended that the CSIR should establish a new Corporate Energy Programme.

The recommendations were approved by the CSIR Board at their meeting in November 1993 and came into effect on 1 April this year.

The role of the new Corporate Energy Programme will be to facilitate CSIR-wide product development in the energy field and to form a strong relationship with the other two corporate programmes, Technology for Development and Environmental Services.

SCIENCE AND TECHNOLOGY AT NATIONAL LEVEL AND THE CSIR'S ROLE

Technology has a major role to play as an enabler of general economic growth and community development. There are complex demands in South Africa for urban and rural development, support to industry in a drive towards global competitiveness and attention to the special needs of small, medium and micro enterprises. Technology users and suppliers will find themselves competing in an ever-changing and extremely competitive international environment.

Interaction in 1992/93 with the Sci-

ence and Technology Mission sponsored by the ANC alliance and the International Development Research Centre (IDRC) of Canada led to the establishment of a special role for the CSIR in the subsequently formed Science and Technology Initiative. Mr Jayendra Naidoo, negotiations coordinator of COSATU, and the CSIR's president, Dr Brian Clark, were elected co-chairmen of the initiative. The purpose of the initiative, which was jointly established by the ANC, COSATU, SANCO and the main participants in the State research system in South Africa, is to address science and technology policy issues. Some of these issues are of immediate concern to the country's political transition and others have longer term implications. The initiative is concerned with matters relating to policy and systems, and will address government and non-governmental organisational issues.

The major benefit of the Science and Technology Initiative has been the creation of a forum designed to bring together representatives of all major participants in the science and technology system in South Africa. Outstanding working relationships have been established and the Initiative has systematically been including an increasing number of participants during the year, while at the same time meeting all its priorities. The Initiative will shortly table a number of important studies on the science and technology system in a future South Africa, affirmative action and governance structures for the new Government of National Unity. It is expected that the new relationships established will provide a platform for future developments.

EXECUTIVE REPORT

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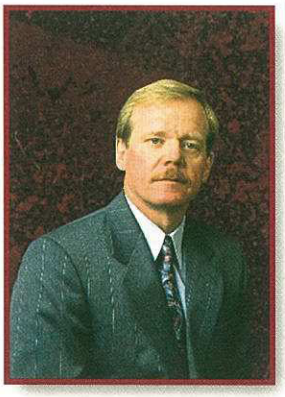

Mr AJ Jordaan
EXECUTIVE VICE-PRESIDENT: FINANCE AND MARKETING SERVICES

During the period under review, the CSIR also hosted a delegation from a similarly sponsored IDRC mission studying environmental management in South Africa. In the past fiscal year, 23% of the CSIR's sales to external clients and 11% of its investment of the Parliamentary Grant were in this area.

FINANCES AND OTHER OUTPUTS

During the period under review, the CSIR's external contract income reached R251,3 million, an increase of 20,4% on the figure for 1992/93 (R208,8 million).

The Parliamentary Grant for 1993/94 amounted to R240,1 million (R205,4 million in 1992/93). However, this figure included a contribution of R15,2 million to the Associated Institutions Pension Fund (nil in 1992/93) so that the actual increase in the grant available for investment in research activities was only 9,5%.

The net surplus for the year amounted to R27,9 million, which compares well with the previous year's surplus of R0,9 million.

AUDIT COMMITTEE

The CSIR Board annually appoints members to serve on an audit committee as contemplated in section 14(1) of the Reporting by Public Entities Act (Act No 93 of 1992). The audit committee meets twice during the financial year to deal with matters prescribed by the Act. The committee, which has been functioning since 1990, consists of the following members:
Dr L B Knoll (Chairman)
Mr P du P Kruger (Non-Executive)
Mr L Boyd (Non-Executive)
Mr E van As (Non-Executive)
Mr W C van der Merwe (Non-Executive)
Dr J B Clark (ex officio)

EXECUTIVE REPORT

(CONTINUED)

HUMAN RESOURCES

The personnel complement of the CSIR declined from 3 077 at the end of March 1993 to 2 714 at the end of March 1994. The personnel turnover of 20,4% during the year under review was expected. This was largely due to the retrenchments following the overhead cost reduction process, a significant number of retirements as well as the non-replacement of staff who resigned.

In terms of occupational safety the CSIR has retained its current performance of a Four-Star NOSA rating as planned. The disabling injury rate was below five, which is on a par with the best in industry. Occupational safety was also broadened to incorporate occupational health and management of environmental factors to provide a more holistic approach and to bring it into line with international health and safety management practice.

Special attention will be given to recruitment and development programmes; changing the workplace culture to become even more receptive to affirmative action; and to making the Affirmative Action Programme a purposeful process aimed at proper representation of the country's population mix at all levels in the organisation. Although good progress has been made, further efforts will be needed in the new financial year to ensure successful implementation of the objectives of the programme in the culture of the organisation.

The CSIR Personnel Sub-committee, which is appointed by the CSIR's Board annually, consists of the following members: Dr L B Knoll, Mr R A Plumbridge, Mr J C Hall and Mr P du P Kruger.

Mr RF Camphor
EXECUTIVE VICE-PRESIDENT:
HUMAN RESOURCES AND SERVICES

CONCLUSION

The reincorporation of South Africa into global affairs comes at a time of sweeping change in political structures and rapid technology development. The CSIR will face formidable challenges as the country's principal technology provider and major link with world technology. This is indeed a crucial and stimulating juncture in our history.

The CSIR will need to continue to return improved performance in the efficient and effective application of resources. Its strategies are robust enough to ensure attainment of its vision, and its people have demonstrated that they have the energy, talent and resolve to implement them.

BOARD APPROVAL

The Board of the CSIR approved the annual financial statements and the group annual financial statements as shown on pages 9 to 32 of this report, at a meeting held on 8 June 1994. These statements are signed on behalf of the Board by:

J B Clark
President

P du P Kruger
Chairman

C S I R

INCOME STATEMENT

FOR THE YEAR ENDED 31 MARCH 1994

	Notes	GROUP 1994 R'000	GROUP 1993 R'000	CSIR 1994 R'000	CSIR 1993 R'000
Income					
Turnover	2	**492 427**	418 925	**492 427**	414 700
Other income		**4 579**	5 877	**4 562**	5 873
Proceeds on disposal of fixed assets		**3 296**	841	**3 296**	841
		500 302	425 643	**500 285**	421 414
Expenditure					
Employees' remuneration		**260 614**	252 835	**260 614**	252 835
Depreciation	7	**23 050**	37 498	**23 050**	33 778
Operating expenses	3	**216 719**	161 250	**216 715**	161 246
		500 383	451 583	**500 379**	447 859
Net operating deficit for the year before investment income		**(81)**	(25 940)	**(94)**	(26 445)
Income from investments	5	**27 256**	28 544	**28 075**	27 429
Net surplus for the year		**27 175**	2 604	**27 981**	984
Accumulated funds at the beginning of the year		**403 486**	400 882	**385 597**	384 613
Accumulated funds at the end of the year		**430 661**	403 486	**413 578**	385 597

C S I R

BALANCE SHEET

31 MARCH 1994

	Notes	GROUP 1994 R'000	GROUP 1993 R'000	CSIR 1994 R'000	CSIR 1993 R'000
Capital employed					
Accumulated funds		**430 661**	403 486	**413 578**	385 597
Employment of capital					
Fixed assets	7	**184 712**	189 981	**184 712**	189 981
Investments	6	**27 853**	7 201	**24 978**	5 103
Interest in subsidiary	4	**—**	—	**27 220**	27 220
Net current assets		**218 096**	206 304	**176 668**	163 293
Current assets		**338 458**	323 679	**296 258**	279 573
Debtors and prepayments	8	**75 995**	50 762	**80 845**	50 762
Stock and contracts in progress	9	**30 851**	29 600	**30 851**	29 600
Cash and short-term deposits		**231 612**	243 317	**184 562**	199 211
Current liabilities		**120 362**	117 375	**119 590**	116 280
Advances received	10	**31 879**	33 412	**31 116**	32 384
Creditors and provisions	11	**88 483**	83 963	**88 474**	83 896
		430 661	403 486	**413 578**	385 597

C S I R

CASH FLOW STATEMENT

FOR THE YEAR ENDED 31 MARCH 1994

	Notes	GROUP 1994 R'000	GROUP 1993 R'000	CSIR 1994 R'000	CSIR 1993 R'000
Cash generated from (utilised in) operating activities		**1 881**	22 018	**(3 465)**	17 490
Cash generated by operations	A	**25 378**	13 017	**24 559**	8 262
Cash generated (utilised) by a decrease (increase) in working capital	B	**(23 497)**	9 001	**(28 024)**	9 228
Cash generated from (utilised in) investment activities		**7 997**	(2 310)	**8 816**	(3 425)
Income from investments (note 5)		**27 256**	28 544	**28 075**	27 429
Proceeds on disposal of associate company (note 4)		**103**	—	**103**	—
Fixed assets acquired	C	**(22 658)**	(31 695)	**(22 658)**	(31 695)
Proceeds on disposal of fixed assets	D	**3 296**	841	**3 296**	841
Cash generated		**9 878**	19 708	**5 351**	14 065
Long-term loan repaid		**—**	4 225	**—**	—
Increase in loans to associate companies		**1 583**	—	**—**	—
Acquisition of trade agreement		**—**	5 000	**—**	5 000
Increase in cash and cash equivalents		**8 295**	10 483	**5 351**	9 065
Increase in fixed deposits		**20 000**	—	**20 000**	—
Decrease in cash and short-term deposits		**(11 705)**	10 483	**(14 649)**	9 065
Cash utilised		**9 878**	19 708	**5 351**	14 065

C S I R

NOTES TO THE CASH FLOW STATEMENT

FOR THE YEAR ENDED 31 MARCH 1994

	GROUP		CSIR	
	1994	1993	**1994**	1993
	R'000	R'000	**R'000**	R'000
A. Cash generated by operations				
Net operating deficit before investment income	**(81)**	(25 940)	**(94)**	(26 445)
Adjusted for: Depreciation	**23 050**	37 498	**23 050**	33 778
Loss on disposal of fixed assets	**1 581**	929	**1 581**	929
Share of associate companies' losses	**828**	530	**22**	—
	25 378	13 017	**24 559**	8 262
B. Cash generated (utilised) by a decrease (increase) in working capital				
Debtors and prepayments	**(25 233)**	(10 405)	**(30 083)**	(10 405)
Stock and contracts in progress	**(1 251)**	(3 336)	**(1 251)**	(3 336)
Advances received	**(1 533)**	3 532	**(1 268)**	3 822
Creditors and provisions	**4 520**	19 210	**4 578**	19 147
	(23 497)	9 001	**(28 024)**	9 228
C. Fixed assets acquired				
Land and buildings	**1 630**	1 147	**1 630**	1 147
Development expenditure and intellectual property	**101**	5 153	**101**	5 153
Equipment	**20 579**	25 232	**20 579**	25 232
Vehicles	**348**	163	**348**	163
	22 658	31 695	**22 658**	31 695
D. Proceeds on disposal of fixed assets				
Book value of assets disposed of	**4 877**	1 770	**4 877**	1 770
Cost	**25 196**	10 385	**25 196**	10 385
Accumulated depreciation	**20 319**	8 615	**20 319**	8 615
Loss on disposal	**1 581**	929	**1 581**	929
	3 296	841	**3 296**	841

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

(CONTINUED)

1. Principal accounting policies

The annual financial statements are prepared on the historical cost basis and in accordance with generally accepted accounting practice. The underlying accounting policies have been consistently applied in all material aspects.

1.1 Basis of consolidation

The consolidated financial statements include the financial statements of the CSIR and its subsidiary. The operating results of the subsidiary are included from the effective date of acquisition.

1.2 Associate companies

Associate companies are those companies in which the group has a significant influence and which it intends to hold as long-term investments. Associate companies are accounted for by the equity method from their most recently audited financial statements or unaudited management information as at 31 March 1994 where this is considered necessary.

1.3 Research and development

Research costs are charged against income as and when incurred. Development costs of clearly defined products, of which the future technical feasibility and commercial viability has been proven to the satisfaction of the Board, are capitalised (refer note 1.5.3). The extent of capitalisation is limited to an amount equal to the expected discounted net future income.

1.4 Foreign currencies

Assets and liabilities in foreign currencies are converted to South African rand at the rate of exchange ruling at the year-end date or rates stipulated in forward exchange contracts. Conversion differences are dealt with in the income statement. Transactions during the year are converted to South African rand at the rate of exchange ruling at date of payment, unless forward exchange contracts have been secured. Forward exchange contracts are secured for all material foreign liabilities.

1.5 Fixed assets and depreciation

1.5.1 Land and buildings

Land and buildings are stated at cost. Buildings are regarded as investment properties and are not depreciated. Provision for maintenance is charged against income.

1.5.2 Plant, equipment and vehicles

Plant, equipment and vehicles are stated at cost less accumulated depreciation.

1.5.3 Development expenditure and intellectual property

Development expenditure and intellectual property consist of capitalised development costs as approved by the Board. Capitalisation is limited to the expected discounted net future income (refer note 1.3).

1.5.4 Depreciation

Depreciation is based on cost and calculated on the straight line method at rates considered appropriate to write off book values over the estimated useful lives of the assets except for:

- Assets costing R2 000 or less, which are written off in the year of acquisition.
- Assets specifically acquired for a contract, which are depreciated over the life of the contract.
- Strategic assets of limited commercial application, which are written down to expected future commercial recoverable values at acquisition, with the remaining book values depreciated over the estimated useful lives of the assets.
- Development expenditure and intellectual property, which are depreciated over a maximum period of three years.

The estimated lives of the main catagories of fixed assets are as follows:

Plant	– 10 years
Equipment	– 5 – 10 years
Computer equipment	– 3 years
Vehicles	– 10 years
Development expenditure and intellectual property	– 3 years

1.6 Investments

Investments are stated at cost less amounts written off. Investments are written down where, in the opinion of the Board, a permanent diminution in value has occurred.

1.7 Turnover

Turnover comprises:

- The net invoiced value of research, development and implementation contracts excluding value added tax.
- Contracts in progress as calculated per note 1.8.
- The annual Parliamentary grant.
- Royalties.

1.8 Stock and contracts in progress

Raw materials and finished goods are stated at the lower of cost or net realisable value. Cost of stock is determined on the average method. Contracts in progress are stated at the lower of cost or net realisable value. Net realisable value is calculated as a percentage of the sales value of work completed, after provision for losses relating to the stage of completion and any foreseeable losses to completion of the contract.

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

(CONTINUED)

	GROUP				CSIR			
	1994		1993		**1994**		1993	
	R'000	%	R'000	%	**R'000**	%	R'000	%
2. Turnover								
Parliamentary grant	**240 120**	49	205 430	49	**240 120**	49	205 430	50
Contract income	**251 342**	51	208 759	50	**251 342**	51	208 759	50
Private sector	**133 950**	27	82 369	20	**133 950**	27	82 369	20
Public sector	**55 216**	11	61 329	15	**55 216**	11	61 329	15
Defence sector	**52 124**	11	52 653	12	**52 124**	11	52 653	12
Other sectors (including Africa)	**10 052**	2	12 408	3	**10 052**	2	12 408	3
Royalties	**965**	—	4 736	1	**965**	—	511	—
	492 427	100	418 925	100	**492 427**	100	414 700	100
3. Operating expenses								
Disclosable items:								
Auditors' remuneration	**874**		964		**870**		960	
Audit fees	**824**		918		**820**		914	
Expenses	**50**		46		**50**		46	
Net loss on disposal of fixed assets	**1 581**		929		**1 581**		929	
Movement in provisions	**4 995**		10 407		**4 995**		10 407	
Provision for self-insurance	**—**		7 000		**—**		7 000	
Provision for property maintenance	**4 995**		3 407		**4 995**		3 407	
Interest paid	**9**		6		**9**		6	
Fees paid for services	**38 170**		25 462		**38 170**		25 462	
Patent costs	**947**		863		**947**		863	
Legal costs	**516**		888		**516**		888	
Consultants	**36 707**		23 711		**36 707**		23 711	
Board members' emoluments for services on the Board	**134**		128		**134**		128	
Other operating expenses	**170 956**		123 354		**170 956**		123 354	
	216 719		161 250		**216 715**		161 246	

4. Interest in subsidiary and investments in unlisted associate companies

Consolidated subsidiary	Issued capital R'000	Effective holding 1994 %	Effective holding 1993 %	Financial year end	Shares at cost 1994 R'000	Shares at cost 1993 R'000
South African Inventions Development Corporation (SAIDCOR)	27 220	**100**	100	31 March	**27 220**	27 220

CSIR associate companies	Issued capital Rand	Effective interest 1994 %	Effective interest 1993 %	Financial year end	Carrying amount 1994 R'000	Carrying amount 1993 R'000
Woodchem Products (Pty) Ltd	10 000	**50,0**	50,0	31 August	**Sold**	103
Impulse Deflection Measurement (Pty) Ltd	1 000	**25,0**	25,0	28 February	**—**	—
Rockradar (Pty) Ltd	100	**25,0**	25,0	31 March	**(22)**	—
Carrying amount – note 6					**(22)**	103
Group associate companies						
Technology Finance Corporation (Pty) Ltd (Technifin)	5 200 000	**50,0**	50,0	30 June	**2 875**	2 098
Included in Technifin carrying value:						
Quality Electronics Developments (Pty) Ltd	1 000	**38,0**	38,0	30 June		
Icarisk (Pty) Ltd	1	**50,0**	50,0	30 June		
Megalux Luminaires (Pty) Ltd	1 000	**25,5**	25,5	28 February		
MSB Detonator Co (Pty) Ltd	1	**50,0**	50,0	30 June		
CNS Communications (Pty) Ltd	1	**50,0**	—	30 June		
Carrying amount – note 6					**2 853**	2 201

During the year under review the interest in CNS Communications (Proprietary) Limited was acquired while the interest in Safety Technologies Limited was sold.

Interests of the CSIR

Net indebtedness		Net investment		
1994 R'000	1993 R'000	**1994 R'000**	1993 R'000	**General nature of business**
—	—	**27 220**	27 220	Investment in and development of research and implementation of technology

Cost or valuation		Indebtedness		Provision for losses		
1994 R'000	1993 R'000	**1994 R'000**	1993 R'000	**1994 R'000**	1993 R'000	**General nature of business**
Sold	5	**Sold**	98	**Sold**	—	Co-ordination, planning and directing the exploitation of intellectual property rights The company was sold during the year without the accumulated intellectual property rights. These rights have been capitalised as fixed assets
—	—	**109**	94	**(109)**	(94)	Impulse deflection measurements
—	—	**—**	—	**(22)**	—	Exploitation of intellectual property rights
—	5	**109**	192	**(131)**	(94)	
2 875	2 098	**—**	—	**—**	—	The acquisition and transfer of technology to industry by licensing new inventions, providing finance to develop technology and venture capital for the exploitation thereof
						Holder of intellectual property in electronic technologies
						Dormant company
						Manufacture and marketing of flameproof lights
						Dormant company
						Dormant company
2 875	2 103	**109**	192	**(131)**	(94)	

	GROUP		CSIR	
	1994	1993	**1994**	1993
	R'000	R'000	**R'000**	R'000
5. Income from investments				
Interest earned	**28 099**	29 089	**23 262**	22 944
Dividend from subsidiary	**—**	—	**4 850**	4 500
Share of associate companies' losses	**(828)**	(530)	**(22)**	—
Loans to associate companies written off	**(15)**	(15)	**(15)**	(15)
	27 256	28 544	**28 075**	27 429
6. Investments				
Interest in associate companies at valuation			**—**	5
Shares at cost or valuation			**72**	77
Permanent diminution in value			**(72)**	(72)
Group book value	**9 447**	7 919	**—**	—
Loans	**109**	192	**109**	192
Provision for losses	**(6 703)**	(5 910)	**(131)**	(94)
Carrying amount (note 4)	**2 853**	2 201	**(22)**	103
Investment in trade agreement	**5 000**	5 000	**5 000**	5 000
Fixed deposits	**20 000**	—	**20 000**	—
	27 853	7 201	**24 978**	5 103

7. Fixed assets

		1994			1993		
Group	Depreciation for the year R'000	**Cost R'000**	**Accumulated depreciation R'000**	**Net book value R'000**	Cost R'000	Accumulated depreciation R'000	Net book value R'000
Land and buildings	—	**107 132**	**—**	**107 132**	106 851	—	106 851
Development expenditure and intellectual property	705	**23 852**	**20 008**	**3 844**	23 751	19 303	4 448
Equipment	22 207	**347 380**	**274 550**	**72 830**	350 391	272 079	78 312
Vehicles	138	**2 293**	**1 387**	**906**	2 202	1 832	370
	23 050	**480 657**	**295 945**	**184 712**	483 195	293 214	189 981
CSIR							
Land and buildings	—	**107 132**	**—**	**107 132**	106 851	—	106 851
Development expenditure and intellectual property	705	**5 254**	**1 410**	**3 844**	5 153	705	4 448
Equipment	22 207	**347 380**	**274 550**	**72 830**	350 391	272 079	78 312
Vehicles	138	**2 293**	**1 387**	**906**	2 202	1 832	370
	23 050	**462 059**	**277 347**	**184 712**	464 597	274 616	189 981

Land and buildings are unencumbered and full details of the titles are avaliable at the registered office of the CSIR.

	GROUP		CSIR	
	1994	1993	**1994**	1993
	R'000	R'000	**R'000**	R'000
8. Debtors and prepayments				
Trade debtors	**63 243**	42 053	**63 243**	42 053
Subsidiary for dividend	**—**	—	**4 850**	—
Prepaid expenses	**1 174**	1 285	**1 174**	1 285
Other	**11 578**	7 424	**11 578**	7 424
	75 995	50 762	**80 845**	50 762
9. Stock and contracts in progress				
Stock	**1 980**	4 380	**1 980**	4 380
Contracts in progress	**28 871**	25 220	**28 871**	25 220
	30 851	29 600	**30 851**	29 600
10. Advances received				
Advances on contracts received from clients	**31 879**	33 412	**31 116**	32 384
11. Creditors and provisions				
Trade creditors	**17 561**	27 517	**17 561**	27 517
VAT payable	**3 994**	1 499	**3 994**	1 499
Provision for self-insurance	**7 000**	7 000	**7 000**	7 000
Provision for accumulated leave	**16 040**	12 741	**16 040**	12 741
Provision for property maintenance	**8 402**	3 407	**8 402**	3 407
Provision for redundancy payments	**5 479**	11 100	**5 479**	11 100
Provision for pension fund contributions	**9 137**	—	**9 137**	—
Chamber of Mines – trade agreement	**—**	5 000	**—**	5 000
Other	**20 870**	15 699	**20 861**	15 632
	88 483	83 963	**88 474**	83 896

12. Retirement benefits of employees

Associated Institutions Pension Fund

All employees who joined the CSIR prior to 1 January 1993 were required to join the Associated Institutions Pension Fund, which is managed and controlled by Government and is not governed by the Pension Funds Act. It is expected that the State will assume responsibility for the unfunded portion of the fund.

Contributions were increased from 1 April 1993 to between 22,5 per cent and 30,0 per cent (between 18,24 and 24,32 per cent in the previous year) of pensionable emoluments of which members pay between 6 and 8 per cent. This statutory increase was funded by an additional Parliamentary grant of R15,2 million.

The fund is a defined benefit plan.

The formula used to determine pensions is based on the pensionable earnings of the final year, and the aggregate period of uninterrupted membership.

Employer contributions of R21,2 million (1993: R17,8 million) and employee contributions of R7,7 million (1993: R8,6 million) were paid over during the year.

Employer contributions are charged against income.

The material shortfall in the funding of benefits may require increased employer contributions in the future, which in turn will increase the cost of employment relative to the market.

CSIR Pension Fund

A CSIR Pension Fund was founded on 1 January 1993. All employees engaged after that date become members of this Fund, which is managed independently by an insurance company.

Contributions are at the rate of 20 per cent of pensionable emoluments of which members pay 7,5 per cent.

The Fund is registered in terms of the Pension Funds Act, 1956 and is a shared benefit plan.

Employer contributions of R890 845 (1993: R34 668) and employee contributions of R534 507 (1993: R20 774) were paid over during the year.

Employer contributions are charged against income.

All possible short-term liabilities of the Fund are fully insured. All future surplus funds will be applied towards the improvement of benefits.

13. Insurance and risk management

The insurance and risk management policies adopted by the CSIR are aimed at obtaining sufficient cover at the minimum cost to protect its asset base, earning capacity and legal obligations against unacceptable losses.

All fixed assets are insured at current replacement value. Risks of a possible catastrophic nature are identified and insured, while acceptable risks of a non-catastrophic nature are self-insured. Self-insurance has been instituted for the first time in the previous year where the cost-to-benefit relationship exceeds the risk and the incidence of losses are of minor and infrequent nature. Self-insured risks are reviewed on an annual basis to ensure that cover is adequate. An amount of R7 million is held in a self-insurance fund to cover these risks. This amount is included in creditors and provisions in the balance sheet. No major losses were experienced during the year under review. Claims of a general nature were adequately covered.