

# Executive report

## Introduction

On behalf of the CSIR Board, we take pleasure in submitting to Parliament, through the Minister of Science and Technology, this report and the audited Annual Financial Statements of the CSIR Group for the financial year ended 31 March 2009.

In the opinion of the CSIR Board, which fulfils the role of directors as envisaged by the Companies Act, Act 61 of 1973, the financial statements fairly reflect the financial position of the CSIR Group as at 31 March 2009 and the results of its operations for the year then ended.

## Statutory basis

As a statutory research council established by government, the CSIR is governed by the Scientific Research Council Act, Act 46 of 1988, as amended by Act 71 of 1990. The organisation is listed as a Public Business Enterprise in terms of the PFMA, Act 1 of 1999, as amended by Act 29 of 1999.

## The CSIR mandate

The CSIR's mandate is as stipulated in the Scientific Research Council Act, section 3:

***"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."***

## Income sources

The CSIR derives income from baseline and ring-fenced grant funding from the Department of Science and Technology (DST),

contract research and development (R&D) income from local and international public and private sectors, and income from intellectual property exploits or technology transfer efforts.

Grant funding is spent on research programmes and research infrastructure as well as R&D skills development. Processes, policies and guidelines underpin the effective utilisation of grant funding. A portfolio approach is used to manage the funding and is structured to align with the mandate of the CSIR, priority areas in national strategy and the needs of key stakeholders.

## Role in the National System of Innovation (NSI)

The CSIR conducts research across the R&D value chain.

This role distinguishes it from tertiary education institutions (TEIs) or public and private sector R&D players (see next page).

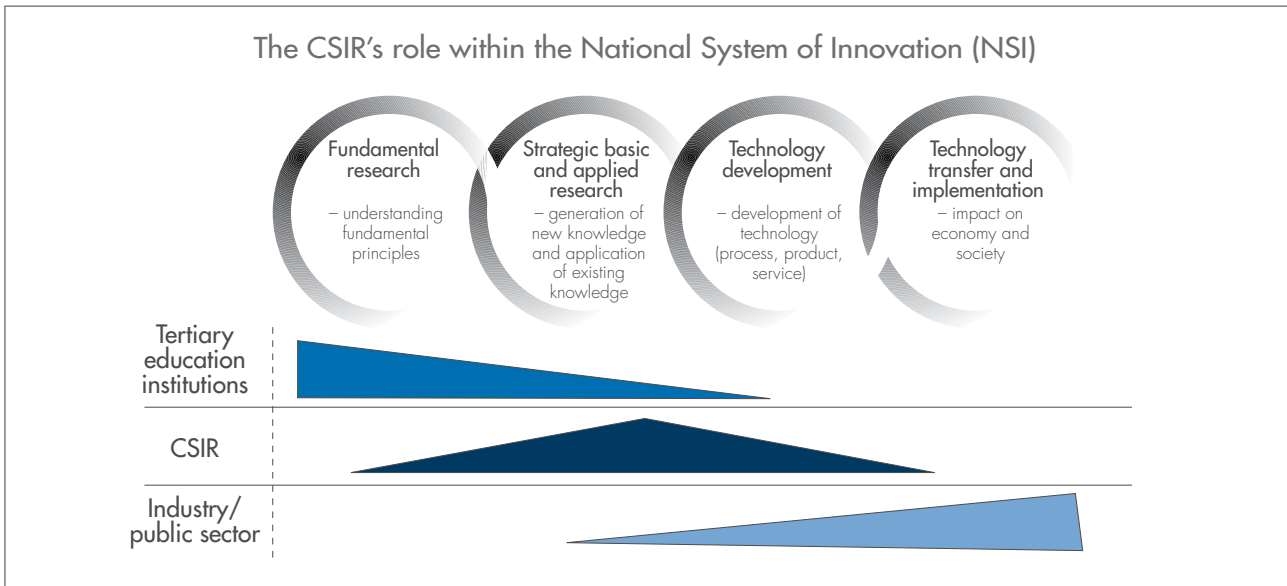
The CSIR conducts a degree of fundamental research, but focuses mainly on strategic basic and applied research, technology development or technology transfer and implementation for commercial or social benefit.

## Responding to national imperatives

The CSIR's research agenda is influenced by the National R&D Strategy, the DST's 10 year plan, other key government strategies and the national development agenda. A particular focus is on human capital development (HCD) and national availability of science, engineering and technology (SET) skills.

The CSIR's role at national level ranges from development and implementation of policy at various levels of government to supporting government on matters of service delivery and impact.

The CSIR is directly involved in a number of national imperatives and strategies such as those on employment and sustainable livelihoods, rural development, combating crime and corruption, improving health standards and responsible use of resources.



As an entity within the NSI, the CSIR annually reflects its contribution to national priorities through a formal Science, Engineering and Technology Institution (SETI) scorecard set by the DST with very specific key performance indicators (KPIs). The CSIR consistently achieves measures of 'outstanding' and 'exceeding stretching targets' in its review ratings. In 2008/09, the CSIR again performed positively against objectives set in its annual Strategic and Operational Plan – evidence of achieving a balance between high standards of science and high standards of corporate governance.

South Africa's national imperatives and global challenges provide the macro-strategic framework within which the CSIR conducts its research. The proportion of CSIR R&D directly supporting national programmes and initiatives has increased by R77 million in 2008/09 to a value of R450 million

(or 47% of total contract income) against a target of R375 million. The organisation also supports and actively participates in the New Partnership for Africa's Development (NEPAD).

### CSIR R&D themes

The research and development strategy of the CSIR is informed by carefully selected areas of focus referred to as research themes. These themes allow for multidisciplinary and integrative research across the organisation which harnesses the collective capabilities of CSIR research units and centres. Programmes undertaken within these themes allow for research and development across the innovation value chain in a coordinated manner for maximum impact in society, government and industry.



## List of CSIR entities

Category	Entity
Operating units	<ul style="list-style-type: none"> <li>• Biosciences</li> <li>• Built Environment</li> <li>• Defence, Peace, Safety and Security</li> <li>• Materials Science and Manufacturing</li> <li>• Natural Resources and the Environment</li> <li>• Modelling and Digital Science</li> <li>• Information and Communications Technology (Meraka Institute)</li> </ul>
National centres	<ul style="list-style-type: none"> <li>• National Laser Centre</li> <li>• Satellite Applications Centre</li> </ul>
Implementation units	<ul style="list-style-type: none"> <li>• Consulting and Analytical Services</li> <li>• Enterprise Creation for Development</li> </ul>
Emerging research areas	<ul style="list-style-type: none"> <li>• Mobile Intelligent Autonomous Systems</li> <li>• Nanoscience</li> <li>• Synthetic Biology</li> </ul>

Organisational support units form part of a CSIR Shared Services grouping and render transactional or specialist strategic support and administrative services to the rest of the organisation. Portfolio offices such as the Human Capital group and Intellectual Property Management and Technology Transfer Support Unit also exist to coordinate and support strategic priorities.

## Organisational priorities

The CSIR's strategy is translated into organisational priorities. Performance is measured both qualitatively and quantitatively, most notably through the KPIs of the DST's scorecard, as mentioned previously.

Organisational priorities have remained consistent over the past few years and have allowed for cumulative performance and entrenchment of strategy. The organisational priorities are as follows:



Priority area:

## Building and transforming human capital

To achieve the increased quantity and improve the quality of R&D that is funded and performed in South Africa and called for by the National R&D Strategy, the national shortage of highly qualified scientific and engineering postgraduates is a cause for concern. The CSIR has subsequently put in place a formal Human Capital Development (HCD) strategy and associated programmes to address this concern.

This strategy entered its third year of implementation in 2008/09. The emphasis was on advancing professional development, increasing the numbers of student researchers, black people and women across all SET levels and promoting the upward mobility of SET personnel.

CSIR imperative	Priority area		Main KPIs	2008/09 Target	2008/09 Actual
Building and transforming human capital	Human capital development	Quantity: number of full-time students supported financially	% core PG investment in Master's and PhD studies	16%	14%
			Number of permanent CSIR staff studying towards Master's or PhD degrees	95	201
			Number of studentships supported	150	172
	Human resource management	Quality of CSIR human resource environment	Total size of SET base (number, %)	1 588 (70%)	1 551 (66%)
			% of SET base who are black	53%	53%
			% of SET base who are female	32%	33%
			Number of staff with PhD level qualifications	240	273

### SET professional development programmes

- Research and Innovation Core Skills (RICS) Programme for young researchers
- Workshops to assist Master's and PhD students with effective planning and structuring of dissertations
- Training on effective co-supervision of postgraduate students
- Use of Refworks to ease information management in production of research papers
- The number of Chief Researchers, i.e. researchers who have proven themselves nationally and internationally, increased from five to ten
- A new SET leadership programme was introduced
- Career ladders were reviewed and improvements will be implemented in the next financial year.

## Pipeline development

- The Maths & Science Improvement Programme**  
 Part of a memorandum of understanding (MoU) with the Denel Centre for Learning and Development, this tuition programme helps 40 learners to improve their science and mathematics results to access university education.
- The Bursary Programme**  
 Of the 37 Honours students supported in 2008/09, 35 qualified for their degrees. In February 2009, bursaries were provided to 67 full-time BSc and BSc Honours students working in fields identified as priority areas by the CSIR.
- The Internship Programme**  
 In 2008/09, 97 BSc and BSc Honours graduates undertook practical experience at the CSIR, including

another 17 unemployed science graduates, sponsored by the DST. Eleven were appointed.

- The Studentship Programme**  
 In 2008/09, a total of 172 Master's and PhD students were recruited.
- Psychosocial support**  
 Support is offered to promote the integration of new and young SET staff and to ensure future career growth. The CSIR offers a comprehensive on-boarding process as well as active mentoring and coaching partnerships.

A CSIR Recruitment Centre was launched in early 2009. The centre allows for streamlined administration, better information management and consistency in procedural compliance. It is set to enhance the CSIR's human resources capability.

The following table shows the staff category over three years:

Staff category	2006/07	2007/08	2008/09
Total staff	2 248	2 260	2 354
SET base	1 490	1 512	1 551
Number of staff with Master's and PhDs	639	678	743
% of staff in SET base	66%	67%	66%
% of black staff in SET base	49%	52%	53%
% of females in SET base	32%	33%	33%

Priority area:

# Strengthening the SET base and performing relevant R&D

The CSIR imperative encourages the continual renewal of the SET base and involvement in emerging SET areas. Inculcated in this objective is the need to develop a portfolio that allows the CSIR to generate impact in the first and second economies,

improve the quality of life of South Africans, produce SET outputs and demonstrate world-class leadership and innovation.

CSIR imperative	Priority area		Main KPIs	2008/09 Target	2008/09 Actual
Strengthening the SET base and performing relevant R&D	Research and development	S&T resource allocation	Review of Parliamentary Grant, including portfolio analysis	Parliamentary Grant funding deployment conforming fully to objectives of CSIR S&T strategy	All PG projects subject to ex-ante and ex-post evaluation through peer review
			Value of capital investment	R136,4m	R188,3m
		S&T outputs	Publication equivalents	346	451,5
	Strategic research alliances	Activity of research relationships	Number of collaborative R&D activities with a value exceeding R1m	51	79
			Number of collaborative research projects with tertiary education institutes (TEIs)	70	120
	Contract R&D	Quality of contract R&D	Value of contract R&D formally recognised as supporting national strategies	R375,0m	R450,0m
			Customer satisfaction	75%	87%

The CSIR's SET activity is guided by the organisation's R&D strategy as well as SET policies and guidelines. A suite of pertinent policies was approved by the CSIR Board. This includes policies on:

- Research ethics
- Access to data and information resources
- Conduct of research
- Investment of Parliamentary Grant
- CSIR fellowships
- Research alliances.

## S&T outputs

The total number of publication equivalents increased by 32% from 343 in 2007/08 to 451,5 in 2008/09. On the basis that the total number of researchers is 722, the publication equivalents per researcher has increased to 0,63, compared to the previous year's 0,43. In 2009/10 the focus is to shift to tracking and improving the quality of publications published in high-impact journals.

## Research partnerships

- At the beginning of 2008/09, the CSIR had research collaboration memoranda of agreement in place with five TEIs, namely the universities of Cape Town, Stellenbosch (amended agreements), Johannesburg, Pretoria and the Witwatersrand. An additional four agreements were concluded with previously disadvantaged TEIs, namely the Walter Sisulu University, Tshwane University of Technology, University of Western Cape and University of Fort Hare. A partnership was discussed with the Nelson Mandela Metropolitan University.
- Eighteen projects were implemented through seed funding from the CSIR Cooperation Fund. Twelve of these projects were with previously disadvantaged TEIs.

## New research collaborations with international partners

New research activities were initiated with the Global Research Alliance (GRA) and Regional Research Alliance (RRA) partners. The CSIR was a founding member of these alliances. In one example, the RRA launched a project on the impact of mercury on water resources caused by small-scale mining and conducted under the auspices of CSIR Natural Resources and the Environment. The project site was in Botswana and results will be applied in South Africa and Zimbabwe as well. Other domains of collaboration include energy, infrastructure, food security, rural development and infrastructure and mushroom cultivation.

An internal audit of the RRA funds has been completed. There were no audit findings.

With respect to the GRA, the following was achieved:

- Support to DST on a strategy for developing and commercialising innovations on resilience to global environmental change.
- A revised proposal on 'Lifting the Burden of Infectious Diseases' for the Wellcome Trust.
- Progress on the Tanga Project investigating the use of medicinal plants to treat symptoms of HIV.
- The low-cost ICT network project was expanded to a second site in Zambia. The CSIR's Meraka Institute and partners in a consortium of African and European research institutions have submitted a proposal for further expansion to the European Union (EU). The Zambian communications authority contributes funding to the project.
- Bilateral relationships with GRA members allow for joint projects and joint project submissions to the EU 7th Framework Programme.
- A CSIR international strategy is being developed with special emphasis on African institutions and guided by the DST's bilateral programme.

Priority area:

# Transferring technology and skilled human capital

The CSIR undertakes a range of activities aimed at ensuring that maximum benefit is derived from scientific research conducted for private and public interests.

CSIR imperative	Priority area		Main KPIs	2008/09 Target	2008/09 Actual
Technology transfer and skilled human capital	R&D outcomes	A robust and attractive portfolio of IP and technologies	New international national patents granted	15	35
		An increased rate of technology transfer for both commercial gain and social good	Royalty and licence revenue	R7,9m	R21,0m

Progress in this area includes:

- The Intellectual Property and Technology Transfer Advisory Committee (IPTTAC) held its second and third meetings in the past year, and already contributes significantly to review and evaluation processes.
- A Technology Readiness Level Assessment (TRLA) practice has been introduced to track the progress of technology development and set measurable targets for transfer at specified stages of development.
- The DTI/CSIR Technology Venture Capital programme had a trial run with the intake of the first group of interns.
- The CSIR actively participated in Portfolio Committee hearings on the Technology Innovation Agency and IPR Bill, as well as public hearings on the matter. CSIR recommendations were favourably considered.
- Royalty and licence revenue for the past year amounted to R21,0 million, exceeding a target of R7,9 million.

CSIR IP portfolio performance in 2008/09

CSIR portfolio performance	Achieved
Invention disclosures	49
Number of new technology packages available for transfer	22
Number of new Patent Cooperation Treaty (PCT) applications	11
Number of new agreements signed for commercial/social gain	17

The CSIR has an obligation to ensure the knowledge it generates is disseminated and accessible to society. During 2008/09, CSIR Consulting and Analytical Services provided mine explosion awareness training to 4 799 people from all main mining industries. CSIR Enterprise Creation for Development assisted with ongoing implementation of 20 projects/enterprises, providing employment to more than 435 people in the underdeveloped areas of the country.

A two-day CSIR Research Conference, entitled 'Science Real and Relevant', was held in October 2008 and attracted some 500 interested parties on both days.

Priority area:

# Financial sustainability and good corporate governance

Priority area		Main and supporting KPIs	2008/09 Target	2008/09 Actual
Financial sustainability	Operational sustainability	Total income (excluding royalty income)	R1 322,1m	R1 431,7m
		Value of contract R&D	R755,0m	R951,4m
		Net margin before provision for performance bonuses	R52,2m	R140,5m
Corporate governance and responsibility	Corporate governance	Number of significant findings on external audit report	None	None
Corporate citizenship		B-BBEE rating	Level 3 contributor	Level 3 contributor
		Energy consumption	Achieve 1,2% reduction in energy consumption on previous year	Achieved 2,6% reduction in energy consumption on previous year
		Environmental stewardship	Maintain ISO 14001 certification	Maintained ISO 14001 certification
		Disabling injury frequency rate (DIFR)	<0.5 disabling injuries	0.4 disabling injuries

## Financial performance overview

### Income

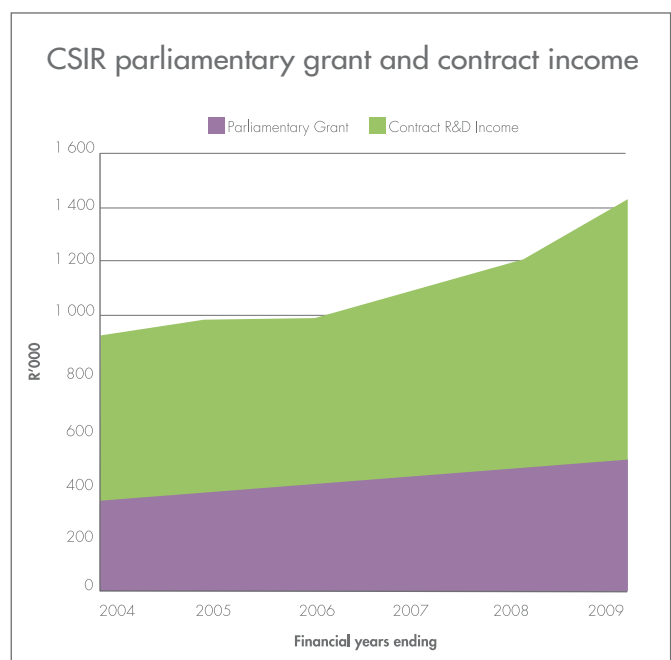
The Parliamentary Grant allocated to the CSIR increased by 7,4% to R477,8 million from the prior year amount of R445 million.

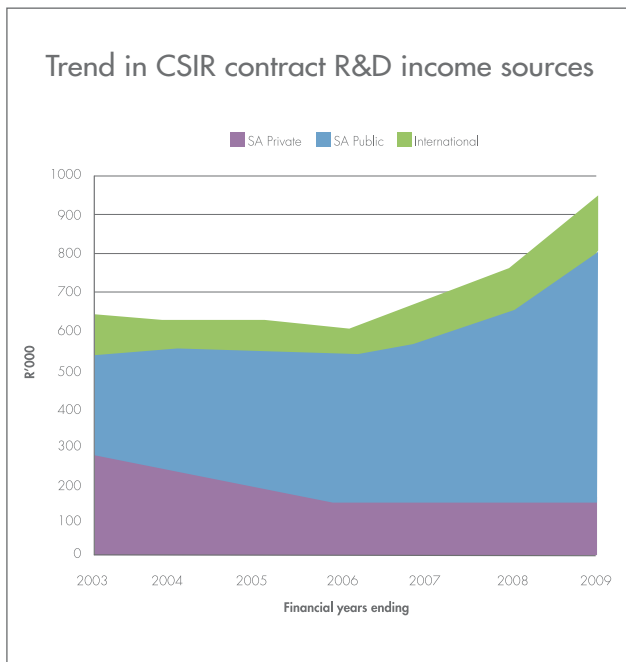
Total contract income increased by 24,2% to R951,4 million (2007/08: R766 million). This includes R104,6 million (2007/08: R59,1 million) ring-fenced funding from the DST.

Income from royalties increased to R21,0 million in 2008/09 from the prior year amount of R9,1 million.

The total operating income of the CSIR increased by 20,8% to an amount of R1 472,3 million (2007/08: R1 218 million).

CSIR parliamentary grant and contract income





To recreate an environment within the CSIR that is conducive to scientific research and innovation, without compromising its commercial integrity, the Beyond 60 reconfiguration process

came into being as the CSIR approached its 60<sup>th</sup> anniversary in 2005/06. The CSIR mantra has been one of “sustainable development; sustainable knowledge base; sustainable business”. The emphasis has been on securing strategic, larger, multi-year contracts that will also create the potential for human capital development and/or significant impact.

The trend in contract R&D income shows a marked improvement since 2006, especially in terms of income from the public sector, also demonstrating an improved alignment with national strategic priorities. International contract income has also increased. Income from the local private sector gradually declined until 2006 and then stabilised at a low level. To arrest this trend, higher targets for private sector income have now been set.

The CSIR Group operating income for 2008/09 increased by R256,4 million to an amount of R 1 492,7 million (2007/08: R 1 236,3 million), an increase of 20,7%.

Royalty income for the CSIR Group increased by 120,1% to an amount of R36,1 million (2007/08: R16,4 million).

### Five-year review of CSIR income and expense indicators

	2009 R'000	2008 R'000	2007 R'000	2006 R'000	2005 R'000
<b>Total income</b>	1 554 910	1 271 062	1 150 467	1 016 104	1 029 932
Parliamentary Grant recognised as income	480 320	429 013	428 055	391 077	356 992
Contract income, royalty income, other income and net finance income	1 074 590	842 049	722 412	625 027	672 940
Local private sector	147 752	137 683	134 647	146 765	187 592
Local public sector	661 682	508 779	435 391	370 892	345 472
International sector (incl. Africa)	142 002	119 584	106 027	82 254	94 291
Royalties and other income	40 516	22 908	17 321	3 412	7 369
Net finance income	82 638	53 095	29 026	21 704	38 216
<b>Operating expenditure</b>	1 495 442	1 219 665	1 125 588	1 047 745	987 348
Employee remuneration	763 867	619 529	579 035	624 202	557 593
Operating expenses	694 435	572 454	496 752	384 157	388 592
Depreciation	37 140	27 682	49 801	39 386	41 163

## Net profit and cash flow

The net profit of the CSIR was R59,2 million (2007/08: R51,7 million). The increase in revenue, royalty income and net finance income, due to continued practices of sound cash management and increases in the repo rate, contributed to the net profit. Net profit for the CSIR Group was R58,3 million (2007/08: R54,2 million).

Cash flow generated from operating activities for the CSIR for the year being reported on was R285,5 million (2007/08: R167,3 million). Significant investments of R188,3 million were made in scientific infrastructure and equipment in 2008/09 (2007/08: R85,9 million). This led to the net outflow due to investing activities of R224 million. The cash and cash equivalent holdings increased to R734,8 million (2007/08: R673,3 million).

## Five-year ratio analysis

	2009	2008	2007	2006	2005
	R'000	R'000	R'000	R'000	R'000
<b>Operating expenses</b>					
Remuneration as a % of total income (excl. finance income)	51,9%	50,9%	51,6%	62,8%	56,2%
Remuneration as a % of total expenditure	51,1%	50,8%	51,2%	59,6%	56,5%
<b>Asset management</b>					
Investment in property, plant and equipment (Rm)	188,3	85,9	79,2	119,2	53,8
Investment in property, plant and equipment as a percentage of revenue	13,0%	7,1%	7,1%	12,0%	5,4%
Net asset turn	3,4	3,2	3,2	2,9	2,7
Current ratio	1,0	1,2	0,9	1,0	1,2
<b>Cash flow</b>					
Net cash from operating activities	285 546	167 307	341 357	146 659	131 909
Cash and cash equivalents end of year (including long-term fixed deposits)	834 830	673 309	557 529	289 070	295 417

## Definitions

Net asset turn – Total revenue (incl. finance income) divided by net assets

Current ratio – Current assets divided by current liabilities

The post-retirement medical benefit expense and liability and the effects of the adoption of SA GAAP, AC133: Financial instruments – recognition and measurement have been excluded for the comparison of financial indicators.

The investment in property, plant and equipment in 2007 and 2006 included the DST building costs of R7,8 million and R87 million, respectively.

## Energy saving

The CSIR's performance on energy saving for the 2008/09 financial year is acceptable considering an increase in energy demand due to organisational development and business growth. The organisation's energy efficiency performance for 2008/09 showed a 2,6% reduction in energy consumption.

## Migration to open source software

The implementation of open source software (OSS) as the basis of CSIR computing has seen 18% of the organisation's staff migrating to OSS during the past financial year. A culture of training in terms of optimal use of OSS has been entrenched and the CSIR has established a research group focused on developing a Linux desktop dedicated to scientific computing to support affordable and flexible scientific infrastructure in Africa and further afield. Internships and studentships were

initiated to support the advancement of human capital in advanced software development. The Department of Science and Technology and the State Information and Technology Agency continue to be our main partners in this regard.

## Broad-based Black Economic Empowerment audit

In line with the Black Empowerment Act, Act 53 of 2003, and the dti Codes of Good Practice published in February 2007, the CSIR has undergone an audit and verification of its B-BBEE performance and status. The audit involved assessment of the organisation's performance in the following six areas: Management control, employment equity, skills development, preferential procurement, enterprise development and socio-economic development.