

# ANNUAL REPORT 2008 | 2009

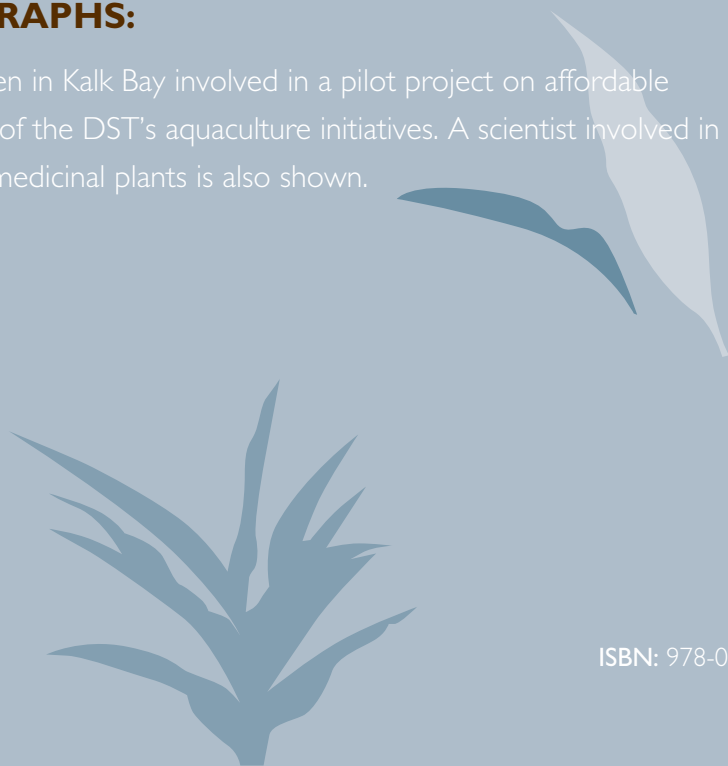


science  
& technology

Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA

## COVER PHOTOGRAPHS:

The cover shows fishermen in Kalk Bay involved in a pilot project on affordable cage-net technology, one of the DST's aquaculture initiatives. A scientist involved in research into indigenous medicinal plants is also shown.



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## OUR VISION

To create a prosperous society that derives enduring and equitable benefits from science and technology.

## OUR MISSION

To develop, coordinate and manage a national system of innovation that will bring about maximum human capital, sustainable economic growth and improved quality of life for all.

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# LIST OF ABBREVIATIONS

<b>ACCESS</b>	Applied Centre for Climate and Earth Systems Studies	<b>GEOSS</b>	Global Earth Observation System of Systems
<b>AICAD</b>	African Initiative for Capacity Development	<b>HCD</b>	human capital development
<b>AFSSA</b>	Action for a Safe South Africa	<b>HEI</b>	higher education institution
<b>AISA</b>	Africa Institute of South Africa	<b>HFCT</b>	Hydrogen and Fuel Cell Technologies
<b>AMTS</b>	Advanced Manufacturing Technology Strategy	<b>HMO</b>	Hermanus Magnetic Observatory
<b>AMI</b>	Advanced Metals Initiative	<b>HRTEM</b>	High-Resolution Transmission Electron Microscopy
<b>ASADI</b>	African Science Academics Development Initiative	<b>HSE</b>	Health, Safety and Environment
<b>ASCC</b>	African Science Communication Conference	<b>HSRC</b>	Human Sciences Research Council
<b>ATM</b>	African Traditional Medicine	<b>HYSA</b>	Hydrogen and Fuel Cell Technologies
<b>AU</b>	African Union	<b>IAC</b>	Inter-Academy Council
<b>BIKS</b>	Bachelor of Indigenous Knowledge System	<b>IAP</b>	Inter-Academy Panel
<b>BioFISA</b>	South Africa-Finland Network for Biosciences	<b>IAT</b>	Institute for Advanced Tooling
<b>CERN</b>	Centre for Nuclear Research	<b>IAMP</b>	Inter-Academy Medical Panel
<b>CHPC</b>	Centre for High Performance Computing	<b>IBSA</b>	India-Brazil-South Africa partnership
<b>CIPSH</b>	Council of Philosophy and Humanistic Studies	<b>ICGEB</b>	International Centre for Genetic Engineering and Biotechnology
<b>CoC</b>	centre of competence	<b>IIASA</b>	International Institute for Applied Systems Analysis
<b>CoE</b>	centre of excellence	<b>IKS</b>	indigenous knowledge systems
<b>COFISA</b>	Cooperation Framework on Innovation Systems between Finland and South Africa	<b>IP</b>	intellectual property
<b>COSTIS</b>	Consortium for Science, Technology and Innovation for the South	<b>IPR Act</b>	Intellectual Property Rights from Publicly Funded Research and Development Act
<b>CPUT</b>	Cape Peninsula University of Technology	<b>ISAD</b>	Information Society and Development
<b>CSDP</b>	Competitive Supplier Development Programme	<b>ISSC</b>	International Social Science Council
<b>CSIR</b>	Council for Scientific and Industrial Research	<b>IYA</b>	International Year of Astronomy
<b>DIMS</b>	Data Information and Management Centre	<b>JIPSA</b>	Joint Initiative on Priority Skills Acquisition
<b>DWAF</b>	Department of Water Affairs and Forestry	<b>JLICA</b>	Joint Learning Initiative on Children and Aids
<b>DPW</b>	Department of Public Works	<b>MEMS</b>	micro electro-mechanical systems
<b>EODC</b>	Earth Observation Development Centre	<b>MRC</b>	Medical Research Council
<b>EMBC</b>	European Molecular Biology Conference	<b>MSM</b>	men who have sex with men
<b>EU</b>	European Union	<b>NAM</b>	Non-Aligned Movement
<b>F'SATIE</b>	French South African Institute for Electronic Engineering	<b>NASAC</b>	Network of American Science Academics
<b>F2P</b>	Farmer to Pharma Grand Challenge	<b>NAP</b>	National Accessibility Portal
<b>FESTOC</b>	Federation of Engineering, Science and Technology Olympiads and Competitions	<b>NEP</b>	National Equipment Programme
<b>FP7</b>	European Union Seventh Framework Programme	<b>NEPAD</b>	New Partnership for Africa's Development
<b>FST</b>	Flame, smoke and toxicity	<b>NIKSO</b>	National Indigenous Knowledge Systems Office
		<b>NIPMO</b>	National Intellectual Property Management Office



<b>NMMU</b>	Nelson Mandela Metropolitan University	<b>SAQA</b>	South African Qualifications Authority
<b>NNEP</b>	National Nanotechnology Equipment Programme	<b>SARChI</b>	South African Research Chairs Initiative
<b>NRDS</b>	National R&D Strategy	<b>SASRIF</b>	South African Strategic Research Infrastructure Forum
<b>NRF</b>	National Research Foundation	<b>SA-VLDB</b>	South African Very Large Data Base
<b>NRS</b>	National Recordal System	<b>SBS</b>	Sector Budget Support
<b>NSI</b>	National System of Innovation	<b>SciELO</b>	Scientific Electronic Library Online
<b>NSP</b>	National Strategic Plan	<b>SET</b>	science, engineering and technology
<b>NSTF</b>	National Science and Technology Forum	<b>SKA</b>	Square Kilometre Array
<b>NSW</b>	National Science Week	<b>SOE</b>	state-owned enterprise
<b>NYS</b>	National Youth Service	<b>STA</b>	scientific and technological activity
<b>NZG</b>	National Zoological Gardens of South Africa	<b>STEM</b>	science, technology, engineering and mathematics
<b>OECD</b>	Organisation for Economic Cooperation and Development	<b>TBP</b>	Technology Balance of Payment
<b>PDP</b>	Professional Development Programme	<b>THRIP</b>	Technology and Human Resources for Industry Programme
<b>R&amp;D</b>	research and development	<b>TIA</b>	Technology Innovation Agency
<b>RBIs</b>	resource-based industries	<b>TWAS</b>	Academy of Sciences for the Developing World
<b>RDI</b>	research, development and innovation	<b>TWOWS</b>	Third World Organisation of Women Scientists
<b>REACH</b>	registration, evaluation, authorisation and restriction of chemicals	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>RICAD</b>	Regional Initiative for Capacity Development	<b>UNIDO</b>	United Nations Industrial Development Organization
<b>S&amp;T</b>	science and technology	<b>UoTs</b>	universities of technology
<b>SAASTA</b>	South African Agency for Science and Technology Advancement	<b>VLDB</b>	very large database
<b>SABINA</b>	Southern African Biochemistry and Informatics Network		
<b>SADC</b>	Southern African Development Community		
<b>SACNASP</b>	South African Council for Natural Scientific Professions		
<b>SAEOS</b>	South African Earth Observation Strategy		
<b>SAFIPA</b>	South Africa-Finland Knowledge Partnership on ICT Programme		
<b>SAJS</b>	South African Journal of Science		
<b>SAMI</b>	South African Malaria Initiative		
<b>SANBIO</b>	South African Network for Biosciences		
<b>SANEDI</b>	South African National Energy Development Initiative		
<b>SANERI</b>	South African National Energy Research Institute		
<b>SANReN</b>	South African National Research Network		
<b>SANSA</b>	South African National Space Agency		





**Naledi Pandor**

*Minister of Science and Technology*

The achievements of the Department of Science and Technology in the year under review give me confidence that our government is on track to deal with the challenges facing our country, and that the Department is well positioned to carry out its mandate in pursuit of overarching national goals.

Our greatest challenge in science and technology remains, without a doubt, the development of our intellectual capital.

The number of experienced researchers approaching retirement is of concern and we have put plans in place to ensure that young people are attracted to careers in science and technology, and that intellectual capital development programmes are strengthened and properly financed. In support of this imperative, the Department of Science and Technology will continue to forge strategic alliances with local and international higher education, and research and technology institutions, as well as public and private enterprises.

We will also work in close collaboration with the Department of Higher Education and Training to grow and strengthen the human capital base for the National System of Innovation.

The rapid development and application of new technologies is likely to enhance the role played by small and medium-sized technology-based firms in our economy. This is particularly the case for information and communication technologies and health-related sectors like biotechnology. It is for these reasons that comprehensive and balanced approaches to innovation, science and business partnerships, and the stimulation of business to develop innovation are top priorities.

The new focus on protecting and exploiting intellectual property rights resulting from publicly financed research and development is important for South Africa's industrial competitiveness. We have begun to initiate processes to support academic and public research institutions in identifying intellectual property with





commercial potential and forging partnerships with the private sector to help us commercialise research results.

Higher education institutions and science councils will be expected to manage public investment in research as a strategic national asset. They will achieve this by developing innovation strategies and reporting on commercialisation outcomes. An evolving partnership would see universities contributing more aggressively to innovation in South Africa.

South Africa must work to address the severe shortage of small businesses engaged in science-intensive areas, and the Department has established broader support structures, such as the Technology Innovation Agency, to ensure that innovative firms have access to technology development and transfer programmes, as well as highly skilled labour. The Technology Innovation Agency will reduce barriers to the commercialisation of technologies and facilitate university research spin-offs.

During the year under review, the South African National Space Agency Bill was signed into law, providing for a national space agency to organise all the space-related activities in the country under one banner. This will support government efforts to monitor and manage disasters like floods, oil spills and fires, and to help farmers detect plants under stress, optimise the application of fertilizer, predict crop yields and detect overgrazing.

While addressing our own developmental needs we must continue to have a continental and global perspective. South Africa will continue to play its part in the New Partnership for Africa's Development (NEPAD) and the Southern African Development Community (SADC) science, technology and innovation programmes, working together as a nation – better and differently – to create a ripple effect across the continent.

I take this opportunity to thank the former Minister of Science and Technology, Mosibudi Mangena, with whom

I worked closely while I was Minister of Education, for the contribution that he made to science, technology and innovation during his term of office.



**NALEDI PANDOR**

*Minister of Science and Technology*





**Derek Hanekom**

*Deputy Minister of Science and Technology*

In today's global knowledge economy, prosperity depends on innovation which, in turn, depends on the investments that we make in the creativity and talents of our people. We must continue to invest not only in technology and innovation, but also in people, as well as creating an environment of inclusion, in which all South Africans can take advantage of their talents, skills and ideas; in which imagination, skills and innovative capacity combine for maximum effect. This is one of the overriding objectives of our government.

We cannot become one of the world's most innovative countries without addressing the skills challenge – a challenge that will become even more apparent as the economy recovers. We need to make investments to support advanced education, research and professional development. We must also ensure that talented South Africans and immigrants recognise South Africa's special advantages as a place to live and work, and that they are able to perform to their full potential.

This annual report captures the DST's major achievements between April 2008 and March 2009. These have been improved by our strategic interventions in human capital development, for example, the centres of excellence programme, which fosters cross-disciplinary and cross-institutional collaboration among researchers and institutions. During the year under review, a total of 395 postgraduate students received grant-holder-linked financial support under the centres of excellence programme, and 220 research articles were published in peer-reviewed journals, including the much-publicised study of the links between HIV prevalence and circumcision.

The Postdoctoral Fellowship Programme supported a total of 70 (30 continuing and 40 new) postdoctoral fellows at various institutions in 2008. At the end of the two-year programme, the number of fellows supported will stand at 110. The programme is aimed at developing research and supervisory capacity, and at giving young





graduates international exposure. In 2008, the Honours Bursary Programme, supported 271 students, with 85 per cent of all awards given to black students, of whom 55 per cent were female. Furthermore, 43 per cent of the bursaries were awarded in engineering and related fields. In addition, 50 master's bursaries were offered.

The Research Professional Development Programme, which is aimed at increasing research capacity and expertise among young professionals by placing them in science councils, placed 68 students last year, bringing the number of beneficiaries to date to 197. On average, 76 per cent of the students who benefit from the programme are black and 50 per cent are women.

Last year, the former Minister of Science and Technology launched the department's National Youth Service. In addition, a total of 125 unemployed science, engineering and technology (SET) graduates were deployed at 22 science centres countrywide. We view our intervention in education as a means of promoting good citizenship, as well as preparing our people for the needs of a modern economy and a democratic society.

In May 2008, the National Research Foundation hosted a PhD Fair, which was attended by about 300 participants representing academia, business and government. The project has already successfully negotiated 10 scholarships, fully paid by the NRF at Singapore University, and 17 co-funded scholarships at Vrije Universiteit in Amsterdam. Discussions are ongoing with Rutgers University in the United States, the German Science Council and the Commonwealth Research Council for scholarships.

From an international cooperation perspective, South Africa signed the Southern African Development Community (SADC) protocol on science, technology and innovation, and established an SADC science, technology and innovation desk in Gaborone, Botswana, through the secondment of a departmental official for three years. This was followed, in January this year, by the appointment of another official as a SADC representative to the United

Nations Commission on Science and Technology. The overall objective of this protocol is to foster cooperation, and promote the development, transfer and mastery of science, technology and innovation in SADC member states.

During the year under review, the European Union (EU) allocated R30 million to address poverty, underdevelopment and marginalisation through scientific, engineering and innovation interventions. After Russia, India and China, South Africa is the fourth most important non-EU partner in the EU Research and Development Framework Programmes. If the size of the respective systems is taken into account, we emerge as a key strategic partner to the EU.

These achievements would not be possible without the ongoing commitment of our scientists, engineers and technologists in the public and private sector. In celebrating the achievements, we remain mindful of the challenges that lie ahead. For example, during the year under review, the National Zoological Gardens, a facility of the National Research Foundation, was awarded gold status by the Heritage Environmental Rating Programme. Despite this, an inability to sustain maintenance adequately due to funding constraints led to the suspension of its accreditation with the Pan African Association for Zoos, Aquaria and Botanical Gardens.

In conclusion, I bid farewell to Mosibudi Mangena, the former Minister of Science and Technology, and thank him for his contribution to our National System of Innovation, while welcoming Minister Naledi Pandor, whom we are confident will take us to even greater heights.



**DEREK HANEKOM**

*Deputy Minister of Science and Technology*





**Dr Phil Mjwara**

*Director-General*

I have the honour of presenting to you the Department of Science and Technology's annual report for the 2008/09 financial year. I am proud to report another successful year for the Department, which I am confident is on course to attain its strategic goals – developing the innovation capacity of the system; building world-class research, development and innovation (RDI) infrastructure; positioning South Africa as a strategic international RDI partner and destination; and developing appropriate human capital for RDI.

The highlights of this reporting period are captured mainly in the part of the report detailing the performance of the Department's programmes. Key to the Department's remarkable achievements are the diligence and commitment of the senior management team and staff of the Department, who delivered sterling results in their adherence to good corporate governance and strategic planning. Having set high goals in the financial year under review, I am pleased to report that we maintained our usual high standards of financial performance, with our spending at 99.5%, and another unqualified audit report from the Auditor-General.

The launch in September 2008 of the South African-designed electric prototype vehicle, the Joule, for demonstrations in 2010, marks one of the Department's major milestones for 2008/09.

In line with the greater focus on the development of new institutional arrangements aimed at narrowing the innovation chasm and improving the technology transfer capabilities of South Africa as a whole, the enactment of the Intellectual Property Rights from Publicly Financed Research and Development Act has given effect to the establishment of offices of technology transfer at higher education and research institutions. Furthermore, the enactment of the Technology Innovation Agency Act will contribute significantly to the national capacity to ensure that a greater proportion of local research



and development is converted into commercialisable technology products and services. This Act is expected to enhance the consolidation of the largely disparate commercialisation activities of DST-created projects and entities.

Other policy and strategy development initiatives undertaken in the 2008/09 financial year include the successful launch of the Hydrogen and Fuel Cell Technologies RDI Strategy, the enactment of the South African National Space Agency Act, and the approval of the National Space Strategy by Cabinet.

I would like to express my warm appreciation to Minister Naledi Pandor and Deputy Minister Derek Hanekom, who have clearly demonstrated their commitment to the DST and its vision. The leadership and workforce of the DST are grateful for the excellent guidance they receive from the Minister and the Deputy Minister, and the positive interaction they enjoy with them.

A word of thanks should also go to the former Minister, Mosibudi Mangena, for his efforts in driving the implementation of the departmental strategy during the year under review.


Finally, I would like to express my sincere appreciation to the executive, staff and stakeholders of the Department for a year of fruitful engagement. Let us seek to improve continuously on the gains already made.



**DR PHIL MJWARA**

*Director-General*





The implementation of the National Research and Development Strategy has continued to be the primary focus of the DST in the 2008/09 financial year, and substantial financial resources were committed to the attainment of its objectives. A number of key factors were identified to guide the DST in its efforts to implement its strategy effectively and efficiently (through targeted investments in specific areas). The DST's performance in most key areas was quite satisfactory, and important achievements were made.

The launch in September 2008 of the South African-designed electric prototype vehicle for demonstration in 2010 marks one of the DST's major milestones for the 2008/09 financial year. The car was unveiled in Paris, France, in October 2008. Another highlight for the 2008/09 financial year is a collaborative effort with National Treasury to develop an automated system for collecting data on public expenditure on scientific and technological activities (STAs). A report presenting actual STA expenditure for 2007/08 has been compiled for submission to Cabinet. Furthermore, a process is underway to implement the integrated national Research Information Management System at higher education institutions, science councils and other research institutions.

In line with the greater focus on the development of new institutional arrangements aimed at narrowing the innovation chasm and improving the technology transfer capabilities of South Africa as a whole, the enactment of the Intellectual Property Rights from Publicly Financed Research and Development (IPR) Act, 2008 (Act No. 51 of 2008), has given effect to the establishment of offices of technology transfer at higher education and research institutions. Furthermore, the enactment of the Technology Innovation Agency Act, 2008 (Act No. 26 of 2008), will contribute significantly to the national capacity to ensure that a greater proportion of local research and development (R&D) is converted into commercialisable technology products and services. This Act is expected

to enhance the consolidation of the largely disparate commercialisation activities of DST-created projects and entities.

Moreover, the DST made huge strides towards the development of the implementation strategies and initiatives for the Grand Challenges identified in the Ten-Year Innovation Plan. The concept documents for most of the Grand Challenges have been developed. Although the implementation plans for the Grand Challenges are still under development, a number of initiatives are in the process of being actualised. Other policy and strategy development initiatives undertaken in the 2008/09 financial year include (a) the enactment of the Space Science Act, (b) the successful launch of the Hydrogen and Fuel Cell Technology Strategy, and (c) the approval of the Space Strategy by Cabinet.

As a consequence of the DST's policies and strategies, investments were continued in the development of a healthy and diverse flux of young people seeking and finding careers in science and technology. Three years ago, the DST and the National Research Foundation (NRF) introduced a graduate work experience programme to enhance the skills and competencies of unemployed graduates and postgraduates in the science, engineering and technology (SET) areas. Through this successful programme, 92 interns were supported in 2008. Since its inception, it has created internship opportunities for 310 graduates, with a total of 166 securing employment during or immediately after completing their internship. In addition, 18 interns went on to study further after completion of their internship. The fact that equity targets were exceeded in the 2008 intake is indeed pleasing. Moreover, the South African Research Chairs Initiative (SARChI), which continues to be a critical instrument in the area of human capital development, had funding to establish new research chairs in the 2008/09 financial year.



A key requirement for the success of a number of long-term R&D-led economic growth initiatives is the continued development of the science and technology (S&T) infrastructure and research base. As part of the infrastructure programme, the DST has established the National Equipment Programme (NEP) and the National Nanotechnology Equipment Programme (NNEP) to ensure that the Department provides state-of-the-art, high-end equipment for researchers and scientists to perform competitive scientific research in diverse disciplines. To date, the DST has invested a total of R150 million in both the NEP and NNEP.

In the 2008/09 financial year, more emphasis was placed on the establishment of platforms and centres of competence (CoCs). These are centres of specialised research or services that are established for the purpose of closing certain gaps or providing selected skills or

services that are necessary but lacking in South Africa. The platforms enable the research community to achieve some of their goals within reasonable budgets and to reduce the need to export their unfinished inventions for further beneficiation. Various supporting platforms and CoCs have been established, or were in the process of being established. These include the South African Malaria Initiative (SAMI), a Tuberculosis CoC, a Structural Biology Platform, an HIV/Aids Treatment and Prevention Research and Innovation Platform, a Sugar Cane Research Platform, a Biosafety Platform, a Eucalyptus Wood and Fibre Beneficiation Platform and a Functional Genomics and Bioinformatics Service Platform.

Although these achievements show significant progress in the implementation of the DST's priority areas, there were challenges in the delivery of some of the ambitious activities promised in the 2008/09 business plan.

Appropriation	Main appropriation (R'000)	Final appropriation (R'000)	Actual amount spent (R'000)	(Over-)/ Under spending (R'000)
Current	226 629	271 043	260 265	10 778
Transfers	3 475 082	3 447 023	3 439 880	7 143
Payments for capital assets	2 261	3 649	3 323	326
Responsible Minister	Minister of Science and Technology			
Administering department	Department of Science and Technology			
Accounting officer	Director-General of Science and Technology			





Naledi Pandor

*Minister of Science and Technology*



Derek Hanekom

*Deputy Minister of Science and Technology*



Dr Phil Mjwara

*Director-General*



Daniel Moagi

*Chief Operating Officer*







**Themba Dlamini**

*Programme 1:  
Deputy Director-General  
Corporate Services and Governance*



**Dr Boni Mehlomakulu**

*Programme 2:  
Deputy Director-General  
Research, Development and Innovation*



**Dr Thomas Auf der Heyde**

*Programme 3:  
Deputy Director-General  
International Cooperation and Resources*



**Dr Yonah Seleti**

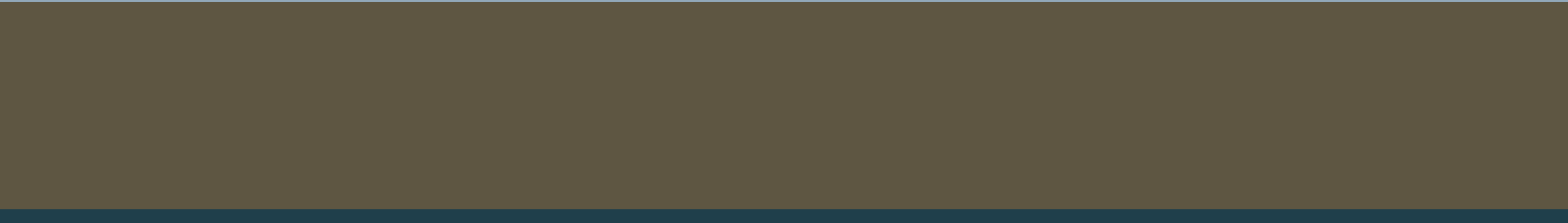
*Programme 4:  
Acting Deputy Director-General  
Human Capital and Knowledge Systems*

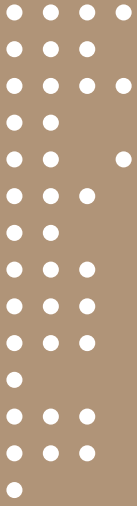


**Marjorie Pyoos**

*Programme 5:  
Deputy Director-General  
Socio-Economic Partnerships*







# OVERVIEW

OF THE DST's PERFORMANCE IN 2008/09





## 1.1 Aim of Vote 31

The Department of Science and Technology seeks to realise the full potential of science and technology in social and economic development through the development of human resources, research and innovation.

## 1.2 Key objectives

The five principal goals of the Department of Science and Technology (DST) are to:

- develop the innovation capacity of the science system and contribute to economic growth;
- develop appropriate human capital for research, development and innovation (RDI);

- build a world-class RDI infrastructure;
- position South Africa as a strategic international RDI partner and destination; and
- develop South Africa's knowledge-generating capacity.

## 1.3 Key performance indicators

Table 1 below shows the indicators that have been developed to guide the efforts of the Department and to track its progress in implementing the above goals.

*Table 1: Selected indicators and actual performance*

Selected indicators	Annual targets			Actual performance	Reasons for variance
	2006/07	2007/08	2008/09		
Amount leveraged from international sources	R70 m	R94,1 m	R189 m	More than R330 m was leveraged from international sources.	
Number of new international bilateral projects (100)	60	64	86	162 new bilateral projects were established.	
Number of students on the special bursary programme (415)	-	280	415	271 honours and 50 master's students (a total of 321 students) were awarded bursaries.	Refer to Programme 4, table starting on page 57.
Number of interns supported (100)	49	68	100	A total of 174 interns were supported.	
Total number of centres of excellence (CoEs) established.	7	7	8	A total of eight CoEs were established.	
Total number of research chairs established (72)	21	72	72	10 research chairs were established.	Refer to Programme 4, table starting on page 57.
Number of PhDs and postdoctoral fellowships supported at science councils and higher education institutions (HEIs) (155)	113	107	155	102 bursaries were awarded for PhDs and postdoctoral fellowships.	Refer to Programme 4, table starting on page 57.
Number of joint S&T project activities between the DST and other departments (14)	2	6	14	Eight new joint S&T initiatives were introduced.	
Number of flagship projects supporting strategic areas of research and development (R&D) (13)	6	11	13	Two additional flagships introduced.	





## I.4 Programmes

### **Programme 1: Administration**

Programme 1 is responsible for the overall management of the Department and provides centralised support services. It also ensures that funded organisations comply with good corporate governance practices and are aligned with the strategic focus of the National System of Innovation (NSI). It monitors and evaluates the science councils.

### **Programme 2: Research, Development and Innovation**

Programme 2 provides policy leadership in the DST's long-term, cross-cutting RDI efforts in the NSI, and plays a key role in developing strategic new institutional arrangements to drive RDI in South Africa. It has five subprogrammes:

- Space Science and Technology.
- Hydrogen and Energy.
- Biotechnology and Health Innovation.
- Innovation Instruments and Planning.
- The National Advisory Council on Innovation Secretariat.

### **Programme 3: International Cooperation and Resources**

Programme 3 develops and services bilateral and multilateral relationships and agreements in S&T to strengthen the NSI and enable a flow of knowledge, capacity and resources into South Africa and Africa. It has three subprogrammes:

- Multilaterals and Africa, which coordinates and manages South Africa's participation in international

S&T platforms at subregional (SADC), continental and global levels, and provides financial support to the Africa Institute of South Africa and to various institutions in support of international science programmes.

- International Resources, which provides help in accessing international resources for S&T through leveraging strategic international partnerships, supporting participation in competitive international funding programmes, promoting foreign investment and locating global scientific infrastructure in South Africa.
- Overseas Bilateral Cooperation, which ensures that South Africa is a destination of choice for S&T by facilitating collaborative activities with countries outside Africa and leveraging resources in support of the NSI.

### **Programme 4: Human Capital and Knowledge Systems**

Programme 4 develops and implements national programmes to produce knowledge and human capital, as well as the infrastructure, equipment and public research services, required to sustain the NSI. It has three subprogrammes:

- Human Capital and Science Platforms.
- Emerging Research Areas and Infrastructure.
- Indigenous Knowledge Systems.

### **Programme 5: Socio-Economic Partnerships**

Programme 5 provides policy, strategy and support for R&D-led growth of value-adding industries to enable government, industry and society to understand and deal better with the challenges of global change. It also provides support for evidence-based research on the human and social dynamics of development and for the



enhancement of government decision-making on S&T (including R&D) as productive investments. It has three subprogrammes:

- Science and Technology for Economic Impact
- Science and Technology for Social Impact
- Science and Technology Investments

## **1.5 Overview of service delivery and key policy developments for the 2008/09 financial year**

The DST has identified a number of key factors that will guide its efforts in implementing its strategy effectively and efficiently (through targeted investments in specific areas). These factors are outlined below, together with the progress and achievements made in the 2008/09 financial year:

### **(a) Engineering, technology, research and innovation skills and human capital**

#### ***Postgraduate students and researcher development***

SARChI, a critical instrument in the area of human capital development (HCD), had funding to establish 15 new research chairs during 2008/09 in areas aligned with key government strategy. SARChI is set to revitalise the NSI through an injection of expertise and funding. Ten research chairs will finally be awarded in 2009. In 2008, SARChI funded a total of 374 postgraduate students under the supervision or mentorship of the current 72 research chairs. These 72 research chairs had a total of 318 research outputs.

The process of establishing one additional centre of excellence (CoE) in global change is being finalised, resulting in a total of eight CoEs established to date. The seven existing CoEs continue to foster cross-disciplinary and cross-institutional collaboration among researchers and institutions. In 2008, a total of 395 postgraduate

students received grantholder-linked financial support under the CoE programme. A total of 220 research articles were published in peer-reviewed journals across the seven CoEs, including the much-publicised study findings of the links between HIV prevalence and circumcision.

The Postdoctoral Fellowship Programme supported a total of 70 (30 continuing and 40 new) postdoctoral fellows at various NSI institutions in 2008. When these people have completed the two-year programme, the number of postdoctoral studies funded to date will be 154. The programme is aimed at developing research and supervision capacity, and at giving young graduates international exposure. The Honours Bursary Programme, on the other hand, supported 271 students in 2008, with 86% of the awards given to black students and 55% allocated to females. In 2008, 43% of the bursaries were awarded in engineering and related fields. In addition, 50 innovation master's bursaries were offered in 2008.

The Research Professional Development Programme, which is aimed at increasing research capacity among young professionals by placing them in science councils, saw a total of 68 students placed in 2008, bringing to 197 the number of beneficiaries to date. On average, 76% of benefiting students are black and 50% are women.

#### ***Bringing unemployed SET graduates back into the mainstream economy***

Three years ago, the DST and the NRF introduced a graduate work experience programme to enhance the skills and competencies of unemployed graduates and postgraduates in the SET areas. Ninety-two interns were supported in 2008, with equity targets being exceeded. Since it began three years ago, the programme has created internship opportunities for 310 graduates, with a total of 166 securing employment during or immediately after completing the internship period. In addition, 18 interns went on to study further after completing their internship period. The above is confirmation



that the internship programme has been extremely successful in providing employment and postgraduate study opportunities in SET-related areas. There has been buy-in from the 21 hosting institutions, i.e. the private sector, science councils and the government's national facilities, which have retained some of the interns after the internship year. Moreover, 30 unemployed science graduates are undergoing an internship programme at various innovation-intensive institutions, such as the Innovation Hub, Telkom Centres of Excellence and the Council for Scientific and Industrial Research (CSIR). Of the 30 internship students, 13 participated in the Innovation Systems for Young Professionals programme, aimed at creating capacity in innovation systems thinking and innovation learning experience, targeting the youth. In addition, 49 students were offered opportunities for undergoing experiential learning and were deployed at technology stations and in private companies.

The National Youth Service (NYS) programme was initiated in October 2003 as a special presidential programme to address the high levels of youth unemployment by creating opportunities for voluntary service and skills development for young people. The Minister launched the DST NYS programme in 2008. Furthermore, a total of 124 unemployed SET graduates were deployed at 22 science centres countrywide.

#### ***Unblocking the SET pipeline through implementation of the Youth into Science Strategy***

The implementation of the Youth into Science Strategy was continued through the National Science Week (NSW) Plan for 2005 to 2009, the National Roll-out Plan for the Establishment of a Network of Science Centres, the National Plan to Place and Support Graduates, the National Plan for Olympiads, Competitions and Camps, the Mathematics, Science and Technology Educators Support Plan, and the National Plan for Supplementary Tuition.

National Science Week 2008 was celebrated at more than 67 sites countrywide. About 195 000 people participated, of whom about 89% were learners. Over three million people were reached through electronic and print media. Funding of R600 000 to support the International Year of Astronomy (IYA), which was launched in January 2009, was made available from the Science Platforms awareness budget. The IYA received an additional R963 000 from the national budget for its activities.

The Minister launched the University of KwaZulu-Natal Science and Technology Education Centre, one of the key events in the roll-out of NSW. To assist existing science centres in responding adequately to the Youth into Science Strategy, 17 science centres across eight provinces received project grant funding. Five Japanese volunteers have been deployed in three science centres to impart their skills in developing exhibits to the local science centre community. The annual conference of the Southern African Association for Science and Technology Centres was held in November 2008. This is an experience-sharing platform for the science centre community.

The Minister also launched the Federation of Engineering, Science and Technology Olympiads and Competitions (FESTOC), which started with a membership of seven SET Olympiad and competition organisers. Three educators and four learners attended summer camps in Canada. Some disadvantaged learners received German bursaries to study engineering and science at higher education institutions.

The DST has been supporting a successful internship programme, including the one linked to the Tshumisano Technology Stations Programme, in which young graduates are provided with a one-year internship either at a station or in one of the SMMIEs supported by a technology station. Approximately 120 interns were supported in the 2008/09 financial year.



Furthermore, over the last three years, the DST has been supporting the FabLabs programme. Initially it was aimed at providing high school students and undergraduates with access to the tools for designing and fabricating products. However, on the basis of the lessons learnt during the first three years of the programme, the potential of using the FabLabs more effectively as a human capital development intervention is being explored, particularly with respect to engineering, design and production skills, in an effort to reposition the programme so that it has a stronger human capital development focus.

## **(b) Essential science and technology infrastructure and research equipment**

One of the key strategic goals of the DST is to ensure that South Africa has world-class S&T infrastructure in place. As part of the infrastructure programme, the DST has established the NEP and the NNEP to ensure that researchers and scientists are provided with state-of-the-art, high-end equipment so that they can perform competitive scientific research in diverse disciplines. To date, the DST has invested a total of R150 million in both the NEP and the NNEP. The two programmes are administered by the NRF, and submit comprehensive annual reports on how the allocations and grants were disbursed to researchers.

Apart from the established NEP and NNEP programmes, an additional R37 million was collectively spent by the DST and the NRF to address strategic infrastructure needs across the National System of Innovation. This was the first purposeful attempt to target strategic infrastructure needs, primarily for the Grand Challenges and to some extent for the science and technology missions. Furthermore, the DST, in partnership with the NRF, successfully initiated a project to establish a High-Resolution Transmission Electron Microscopy (HRTEM) Centre at the Nelson Mandela Metropolitan University (NMMU). Sasol and the Pebble Bed Modular Reactor project contributed a total of R11 million towards the project. This will be the only facility of its kind in Africa.

The DST's infrastructure programme has also provided high-speed computational power and networks for researchers and scientists through its cyberinfrastructure initiative. The Centre for High Performance Computing (CHPC) now boasts 30 to 40 teraflops of high-speed computing capability. With this amount of power, researchers and scientists are able to perform simulations, modelling and other essential applications. The CHPC will support initiatives such as the Square Kilometre Array (SKA) and the National Space Agency by providing computational power and capability. Researchers and space scientists will be able to analyse and interpret large amounts of data collected through radio telescopes at great speed.

The South African National Research Network (SANReN) is another part of the cyberinfrastructure initiative. It provides a broadband network of 10 Gbps to researchers for the effective transmission of research data and information. It is envisaged that 54 national institutions will be connected through a 10 Gbps broadband optical fibre network by the end of the 2009/10 financial year.

SANReN enabled South Africa to participate in a worldwide, real-time astronomical experiment (very long baseline interferometry) during the first week of May 2008. The radio astronomy dish at Hartebeesthoek linked up with observatories in Poland, Sweden, Italy and the UK (and even briefly to Arecibo in Puerto Rico) to form a giant virtual radio telescope. SANReN also reached a significant milestone when the first four research infrastructure sites went live in Johannesburg on 31 March 2008. The four sites are the main campuses of the University of the Witwatersrand and the University of Johannesburg (UJ), as well as two of UJ's satellite campuses, Bunting and Doornfontein. The four sites are on a shared 10 Gbps ring network that connects them to each other and to a major gateway site operated by Tertiary Education Network and hosted by Internet Solutions in Johannesburg.

The DST, in collaboration with the CHPC and SANReN, has embarked on a process of establishing a national very large database (VLDB) in South Africa. This will be a centre or warehouse where storage, processing, analysis, digital curation and manipulation of large data sets will be done. The South African Very Large Data Base (SA-VLDB) is a third component of the cyberinfrastructure initiative. Furthermore, IBM has donated a 14-teraflop BlueGene supercomputer to sub-Saharan Africa and has decided to locate it at the CHPC in South Africa. The donation will ensure that the CHPC establishes collaborations with African counterparts in various areas of scientific research. The computer will assist the continent in solving challenges relating to climate change and energy. The computer was installed and commissioned in October 2008.

**(c) Research, development and innovation**

Three of the four subprogrammes under the Research, Development and Innovation Programme, namely Biotechnology and Health Innovation, Hydrogen and Energy, and Space Science and Technology, are responsible for driving the implementation of three Grand Challenges of the Ten-Year Innovation Plan. These are Farmer to Pharma, Energy Security, and Space Science and Technology. In addition, the Space Science and Technology subprogramme drove the enactment of the South African National Space Agency Act of 2008 to support the industrial development of space technologies. Instruments such as technology platforms and the centres of competence were used by research, development and innovation to narrow the innovation chasm in strategic research, development and innovation areas, while supporting human capital development.

The fourth subprogramme, Innovation Priorities and Planning Instruments, is responsible for the establishment of appropriate institutional instruments and the development of appropriate innovation-promoting policies for the National System of Innovation, which include the Technology Innovation Agency (TIA) Act of 2008 and the Intellectual Property Rights from Publicly Funded Research (IPR) Act of 2008.

TIA will provide funding for R&D commercialisation in South Africa and facilitate technology transfer. The IPR Act and the subsequent establishment of the National Intellectual Property Management Office (NIPMO) will protect the country's investments in R&D and ensure that there is a harmonised mechanism to allow all South Africans to benefit from intellectual property (IP) created through public funds.

**(d) Farmer to Pharma (including biotechnology, health innovation and indigenous knowledge systems)**

The concept document for the Farmer to Pharma (F2P) Grand Challenge has been developed. Although the implementation plan for the F2P is still under development, a number of initiatives are in the process of being established. A proposal for the concept of a preclinical testing facility, based on a feasibility assessment and possible models, has been developed by a steering committee for consideration and approval by the DST. Various activities supporting the establishment of a National Bioprospecting Platform are also under way. These include terms of reference drawn up for the formation of a steering committee to assist the DST in the development of a National Bioprospecting Platform, various funded projects at a number of universities and institutes, and the Medical Research Council's African Traditional Medicine, Drug Discovery and Development National Collaborative Research programme. In addition, various supporting platforms and centres of competence have been established or are in the process of being established. These include the South African Malaria Initiative, a Tuberculosis CoC, a Structural Biology platform, an HIV/Aids Treatment and Prevention Research and Innovation Platform, a Sugar Cane Research Platform, a Biosafety Platform, a Eucalyptus Wood and Fibre Beneficiation Platform and a Functional Genomics and Bioinformatics Service Platform.



The Indigenous Knowledge Systems (IKS) Bioprospecting and Product Development flagship projects were developed as part of F2P and have been integrated into the F2P strategy. Three of the four flagship projects (on traditional medicines, nutraceuticals and cosmeceuticals) are directly related to the Farmer to Pharma Grand Challenge. The research teams comprise researchers from universities and research councils, and indigenous knowledge holders.

### **(e) International relations and technology transfer technologies**

The enactment of the IPR Act has led to the establishment of offices of technology transfer at higher education and research institutions. This will contribute to the technology transfer capabilities of South Africa as a whole. In addition, ongoing liaison with New Zealand towards the establishment of a R500 million venture capital fund in South Africa has contributed to profiling South Africa as a preferred technology transfer partner.

The DST has also been involved in several bilateral discussions with Mauritius, Mozambique, India and Russia, as well as discussions with representatives from Cuba, Italy, Brazil and some African countries. Some collaborative projects have been identified, particularly with India, Russia and Cuba. The DST has engaged with a number of international partners, namely Argentina, France, Brazil, China, Japan and the European Commission. In particular, the DST will be pursuing the development of South Africa's requirements for mission control with Argentina, and other opportunities, including navigation augmentation, with the European Space Agency.

Through collaboration with the subprogramme Overseas Bilateral Cooperation, a symposium was coordinated to enable Chinese and South African researchers to make presentations that would identify areas of possible collaboration within the ambit of the African Origins Platform. A week-long synchrotron conference, with a

strong presence of international delegates, was held in February 2009.

The DST continued the process of designing a clearer approach to international partnerships in the major areas of advanced manufacturing, advanced metals, global change, ICT and chemicals. This process began in the previous financial year. As part of this effort, progress has been made in the strengthening of bilateral relations with Germany on advanced manufacturing and science and technology for sustainable development, with Poland on titanium, with Norway on global change, with Finland on local innovation systems and ICT, and with a number of African countries on mining and minerals research and development. Much work has been done with a number of African countries on developing the statistical systems needed for evaluating and monitoring the performance of their national systems of innovation, particularly in the context of frameworks for R&D expenditure surveys.

### **(f) Policy and strategy capacity**

The enactment of the Technology Innovation Agency Act has contributed significantly to the national capacity to ensure that a greater proportion of local R&D is converted into commercialisable technology products and services. This is not only to enhance awareness of opportunities among local R&D companies, but also to consolidate the (to date) largely disparate commercialisation activities of DST-created projects and entities, including the Innovation Fund and the biotechnology regional innovation centres.

The DST has also participated in various Organisation for Economic Cooperation and Development (OECD) meetings, which assisted in policy and strategy development for various aspects of science and technology development. Consequently, a plan has been developed and a process initiated to develop a bioeconomy strategy to incorporate a review of the National Biotechnology Strategy and the development of

a Health Innovation Framework Strategy. Furthermore, the National Space Strategy is now an approved instrument for which implementation plans are currently being finalised. The subprogramme also participated in the deliberations leading to the finalisation of the National Space Policy, which was approved along with the National Space Strategy.

The National Indigenous Knowledge Systems Office (NIKSO) leveraged funding from the Japan International Cooperation Agency and World Intellectual Property Organisation and organised a countrywide capacity-building seminar on intellectual property rights. NIKSO has managed to form an intergovernmental committee on intellectual property training needs. The development of sui generis legal protection for IKS has begun, but before it can progress, the parliamentary process of finalising amendments to the Intellectual Property Laws Amendment Bill, directed by the Department of Trade and Industry, must be completed.

**(g) The development of strong innovation chains in information technology and manufacturing**

On the ICT front, the DST began a medium-term process of finding ways of enhancing the interaction between major multinational ICT firms and the NSI. Early engagements were held with IBM and Microsoft, and ongoing interactions with SAP and Nokia will mature in the 2009/10 financial year.

The DST has continued to oversee the implementation of the National ICT Research and Development Strategy. During 2008/09, the Department facilitated the submission of the ICT Research and Development Strategy to Cabinet as part of the progress report on the programme of action of the newly established Information Society and Development (ISAD) Government Cluster. The DST plays a leadership role on the ISAD Subcommittee on ICT Research and Development, since the DST's Director-General is the

chairperson of that subcommittee. Two of the major priority actions in this regard are (a) the establishment of a Centre of Competence on Information Security, and (b) the deployment of wireless mesh network technology, mainly in rural, underserved communities. The Centre of Competence on Information Security draws on South African expertise in cryptography, network security, Internet security, smart-card technology, biometrics and wireless communication security, among other things. The deployment of the wireless mesh network is integrated in the Dinaledi Schools and other government facility broadband connectivity platforms. Some of the key actions in the implementation of the broader National ICT Research and Development Strategy include R&D by working groups in the CSIR's Meraka Institute on human language technologies, geomatics (e.g. the Advanced Fire Information Service), and next-generation networking technologies and associated services.

The Advanced Manufacturing Technology Strategy (AMTS) symposium in April showcased the AMTS-funded projects, creating awareness within the research and development and industry sectors of the range of initiatives currently being pursued. Good progress was made in the development of first-stage prototypes of a natural-fibre composite component for Airbus under the NATFIBIO project. In response to a growing demand for biodegradable products, the DST initiated a project on the development of biodegradable packaging for the fresh fruit industry for the export market called GREENPAC. A range of R&D institutions and industry players are networked in these projects, laying the foundation for the commercial exploitation of these high-value/high volume manufacturing opportunities.

The sensor focus area has also matured, through robust industry-research networks, into an area of high impact for South Africa. This includes the migration into micro electro-mechanical systems (MEMS) technology, and a plan has been designed to develop a dedicated MEMS





research and development facility in South Africa. This activity has also created the opportunity to focus the micro-manufacturing activity on the manufacturing of MEMS devices.

A series of initiatives on titanium beneficiation has resulted in the country developing a strategic capability in this area of advanced technology, with particular emphasis on the aerospace industry. The initiatives include the High-Performance Machining of Titanium Project undertaken jointly by a South African network and the Fraunhofer Institute for Machine Tools and Forming Technology in Germany, and potential cooperation between a CSIR-led consortium and Aviation Valley in Poland on investment casting of titanium. These initiatives have placed South Africa at the forefront of titanium beneficiation in support of an imminent titanium production capability.

Included in the AMTS Symposium in April was a special workshop on the draft Micro-manufacturing Strategy. One of the highlights of 2008/09 was the Reconfigurable Manufacturing Systems Imbizo, structured around the review report on Advanced Production Technologies. The implementation unit of the DST-led AMTS developed the terms of reference for micro-manufacturing projects, and a call for expressions of interest was open from 1 August to 30 September 2008.

In another area of advanced production technologies, the High-Performance Machining Project held a commencement meeting on 1 April 2008, after which contracts were signed with the universities of Cape Town and Johannesburg, and later Stellenbosch University. The implementing unit for the DST-led AMTS is also part of the organising committee for the peer-reviewed second Robotics and Mechatronics Symposium and is a sponsor for this event and the RAPDASA (rapid prototyping) Conference, both of which took place during the week of 10 November 2008. The broad spectrum of research and technology participants in the AMTS include the University of KwaZulu-Natal, Tshwane University of Technology, Durban University of Technology, the University of the Witwatersrand, the CSIR, Stellenbosch

University, Vaal University of Technology, Cape Peninsula University of Technology, the Central University of Technology, Nelson Mandela Metropolitan University, North West University, Aerosud, the University of Cape Town, the University of Johannesburg, the University of Limpopo, MegChem, Incomar, AMT, Epsilon, Jonker Sailplanes, Savek, SFS, Fibre Converters, Plastamid, Sunspace, MBV Consulting, Aerosud Interiors, Denel (Detek), SST and the University of Pretoria.

A key requirement for the success of a number of long-term R&D-led economic growth initiatives is the continued development of the science and technology infrastructure and research base. Through the Tshumisano programme, the purchase of expensive but critical infrastructure is continuing through a R4 million major equipment fund. In addition, support was provided to the Nuclear Energy Corporation of South Africa in previous years to upgrade the nuclear manufacturing facilities at Pelindaba as part of the broader strategy to build South Africa's nuclear industry. DST investments during the year under review included R2,88 million for the precious metals research portfolio, R3,39 million for the new metals research portfolio and R2 million for a 630-ton machine for industrial-scale research and development in the light metals research portfolio.

In line with the greater focus on policy and strategy, major progress was made in developing a 10-year implementation plan for the Global Change Grand Challenge. In addition, the DST continues to play an active role in the Industrial Strategy Focus Group and, through bilateral engagements and assistance, in strengthening strategy around the development of the titanium, fluorochemicals, information security and biocomposites industries in South Africa.

**(h) The development of technologies to address poverty and the poor quality of life of many South Africans**

The 2008/09 financial year saw the successful finalisation of the processes for establishing six SARCHI research chairs



in the human and social sciences fields. These university-based research chairs will herald the introduction of a critical mass of research effort on poverty, constraints to development, concepts of sustainable development, dynamics of human behaviour and dynamics of change across the lifespan of individuals and organisations. The SARChI programme facilitates the inclusion of a growing number of master's and doctoral students, and therefore much-needed growth in the base of research capacity. Another highlight of the year under review was the new initiative to establish community-based assessment centres at universities. The objective of this initiative is to address the challenge of creating a bridge between ordinary society, particularly communities in poor and underserved areas, and the knowledge base of the country, using science for problem-solving. This is well aligned with the approach that the universities have adopted of having a third mission beyond teaching and research: that of community service.

The year under review also saw the successful completion of Phase 1(a) of a geomatics platform to enhance spatial planning across all spheres of government. The Integrated Planning and Development Modelling Initiative developed an electronic toolkit for integrated planning. The current version of the toolkit is a working prototype of a web-based portal, which demonstrates the capability of the information and modelling platform. It serves as a resource for enhanced planning on three geographic scales, with specific emphasis on housing and transport. The toolkit includes a demonstration simulator, which predicts future settlement growth patterns in response to a range of internal and external forces, and enables the implications and impacts of alternative planning decisions across a range of scenarios to be evaluated. The first phase of the project focused on a specific study region comprising the provinces of Gauteng and Mpumalanga and parts of Limpopo and the North West, including the Moloto Corridor. In Phase 1(b) during the 2009/10 financial year, the demonstration profiler and simulator will be developed with regard to breadth (coverage of

the country beyond the initial case study area), depth (ability to view and use information on various scales for different administrative and institutional entities, from local municipalities to provinces) and functionality (ability to simulate various development outcomes and impacts).

As part of the overall implementation of the ICT Research, Development and Innovation Strategy, the DST seeded the establishment of a critical mass of expertise in wireless mesh networking technologies, in particular for the use of community wireless networks. This has resulted in a number of successful projects, for example in Peebles Valley, Mpumalanga. This project will stimulate sustainable rural development through local enterprise development in broadband infrastructure and services, using innovative applications of wireless mesh networking and free and open-source software. This intervention has now moved to the next stage, with implementation being scaled up in selected areas in three government-prioritised rural poverty nodes that include the communities of the Nkangala District in Mpumalanga, the Sekhukhune District in Limpopo, and the Kgalagadi District in the Northern Cape. The project targets five Dinaledi schools per rural node or district municipality. Each school will act as a hub for connecting an average of 20 government centres in each area. The government centres to be covered by this connectivity include health centres (clinics), Thusong centres (multipurpose community centres), heritage institutions, other schools, community libraries and tribal offices.

A key initiative in the year under review has been the Eastern Cape Sea Cage Finfish Farming Project. Technical challenges with regard to the viability of cage aquaculture along South Africa's rough coasts preceded this initiative. The pilot project is a joint undertaking between the DST, Stellenbosch University's Division of Aquaculture, and Irvin & Johnston (I&J) Ltd. The purpose is to determine the technical, environmental and financial feasibility of farming three indigenous marine finfish species, namely dusky kob, silver kob and yellowtail. The fish



are cultured in sea cages in Port Elizabeth harbour, and the pilot project has already yielded positive results. To facilitate future commercialisation, I&J has also engaged a BEE fishing company, Coega Fishing (Pty) Ltd. Earlier support from the DST has resulted in technologies being successfully developed for 35 small-scale trout farmer enterprises and the establishment of the Hands-on Fish Farmers Cooperative, which is now supplying upmarket supermarkets in the Western Cape.

**(i) *The accomplishment of notable success in turning trends in global science to the national advantage***

As part of the Global Change Grand Challenge, there is a major focus on Southern Ocean research. This includes the interaction between the ocean, the atmosphere and land surfaces. As part of the process, the South African global change research community has organised itself into the African Centre for Climate and Earth Systems Research (ACCESS). The DST is playing a major role, at a policy and strategy level, in developing ACCESS into a

globally significant research centre of excellence over the next decade.

**(j) *Broader science and technology impacts across government***

The Indigenous Knowledge Systems Bioprospecting Platform has brought together stakeholders from a number of government departments, such as Agriculture and Minerals and Energy. The IKS Expo held in August 2008 brought together researchers and knowledge-holder communities to discuss the future of IKS in South Africa. Over a period of five days, seminars and lectures on IKS attracted a large number of participants.

Similarly, partnerships with different government departments (Health, Water Affairs and Forestry) and provincial and local government have been established with the sole purpose of implementing science and technology demonstration projects for enhancing service delivery in housing construction, the delivery of water services and the maintenance of municipal infrastructure.



## 1.6 Departmental revenue, expenditure and other specific topics

### (a) Collection of departmental revenue

Table 2 provides a breakdown of the DST's sources of revenue.

Table 2: The DST's sources of revenue

	2005/06 actual R'000	2006/07 actual R'000	2007/08 actual R'000	2008/09 target R'000	2008/09 actual R'000	Deviation from target
Non-tax revenue						
Sales of goods and services produced by the Department	43	301	24	61	25	-59%
<b>Interest, dividends and rent on land</b>						
Other receipts including recoverable revenue	-	-	6	-	9	-
<b>Sales of capital assets (capital revenue)</b>						
Sale of capital assets	-	57	110	-	-	-
Financial transactions (recovery of loans and advances)	186	671	79	9	298	3.211%
<b>Total departmental receipts</b>	<b>229</b>	<b>1 029</b>	<b>219</b>	<b>70</b>	<b>332</b>	<b>374%</b>

### (b) Departmental expenditure

Table 3 provides details of budgets and expenditure per Programme.

Table 3: Budgets and expenditure per Programme

Programmes	Voted R'000	Roll-overs and adjustments R'000	Virement R'000	Total voted R'000	Actual expenditure R'000	Variance R'000
Administration	105 505	95	22 293	127 893	123 840	4 053
Research, Development and Innovation	873 097	(95)	(5 795)	867 207	864 535	2 672
International Cooperation and Resources	129 315	1 523	11 029	141 867	140 509	1 358
Human Capital and Knowledge Systems	1 449 024	3 361	4 557	1 456 942	1 455 009	1 933
Socio-Economic Partnerships	1 147 031	12 859	(32 084)	1 127 806	1 119 575	8 231
<b>Total</b>	<b>3 703 972</b>	<b>17 743</b>	<b>-</b>	<b>3 721 715</b>	<b>3 703 468</b>	<b>18 247</b>



## (c) Transfer payments

Table 4 provides details of transfer payments made to entities reporting to the DST.

*Table 4: Transfer payments made to entities reporting to the DST*

Name of institution	Amount transferred R'000	Actual expenditure R'000
National Research Foundation		
Subsidy	683 420	683 420
Other transfers	894 588	507 183
Human Sciences Research Council		
Subsidy	163 851	144 146
Other transfers	23 546	20 546
Council for Scientific and Industrial Research		
Subsidy	554 687	554 678
Other transfers	458 550	458 550
Africa Institute of South Africa		
Subsidy	30 464	27 850
Other transfers	0	0
Academy of Science of South Africa		
Subsidy	5 570	3 776
Other transfers	6 750	4 250

## 1.7 Capital investment, maintenance and asset management plan

### (a) Maintenance

The DST's building is relatively new and therefore does not require much structural repairs. However, maintenance costs were incurred during the reporting period, to repair leakages and the building's centralised air conditioning system.

For this reason, R3,1 million was devolved from the Department of Public Works (DPW) for property management for the 2008/09 financial year. The total allocated budget was paid to the DPW according to the devolution agreement.

### (b) Asset management

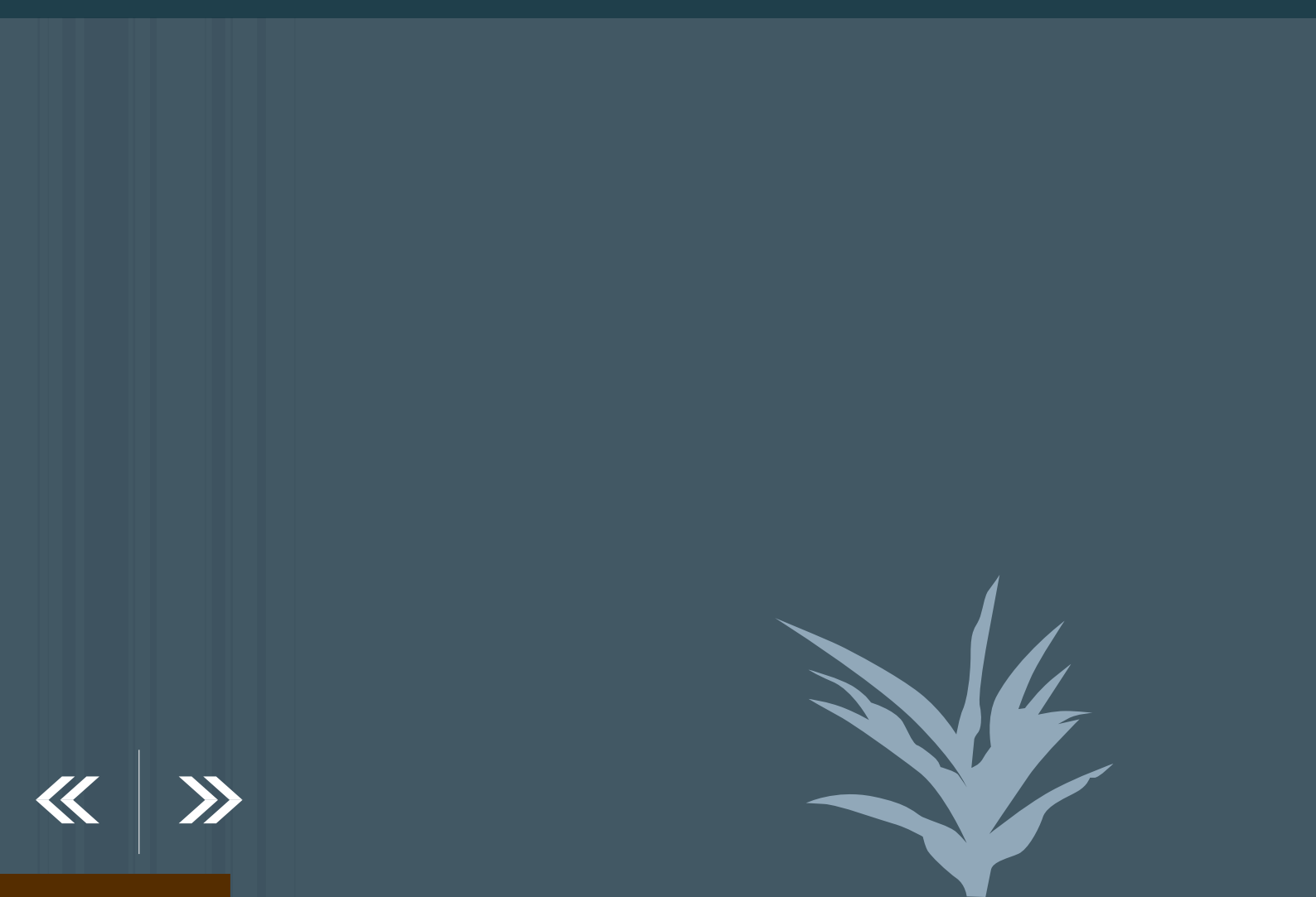
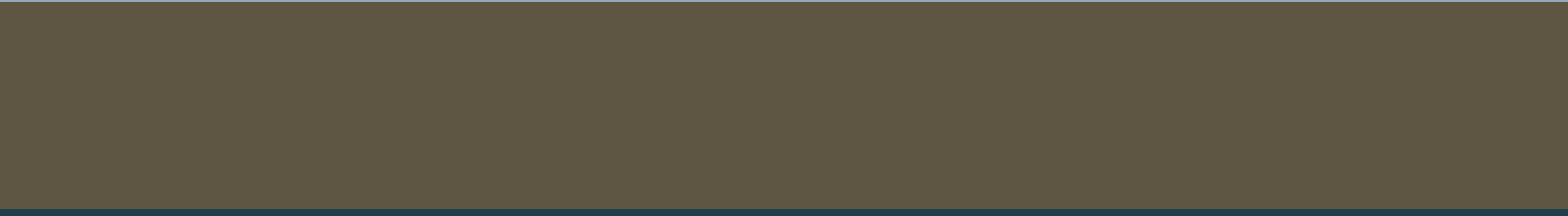
Asset management policies and procedures are in place and in compliance with section 38(1) (d) of the PFMA.

Details of how asset holdings have changed over the period under review are provided in Note 37 of the financial statements. About 90% of the Department's capital assets are in good condition, while the remaining 10% are in a fair condition.

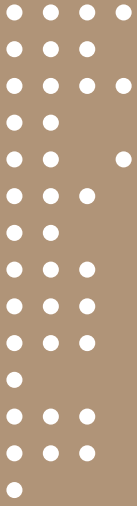
In terms of the bid process for projects, the Department has cross-functional bid specifications, evaluation and adjudication committees with delegated powers from the Accounting Officer. These committees award bids following an adjudication process.





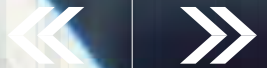






# SUMMARY

OF THE PROGRAMMES



## **PROGRAMME I: ADMINISTRATION**

This Programme is responsible for the overall management of the Department and for providing centralised support services to ensure that funded organisations comply with good corporate governance practices and are aligned with the strategic focus of the NSI, as well as monitoring and evaluating the science councils. It has three subprogrammes:

- The offices of the Minister, the Deputy Minister and the Director-General.
- Corporate Services, which is responsible for finance, strategy and planning, communications, human resource management, legal services, information technology systems and support, and internal auditing.
- Property Management, which covers functions and funds that have been devolved from the Department of Public Works.



## PROGRAMME 2: RESEARCH, DEVELOPMENT AND INNOVATION

### 2.1 Purpose

The purpose of the Research, Development and Innovation Programme is to provide policy leadership in the DST's long-term cross-cutting research and innovation area in the National System of Innovation and to play a key role in developing strategic new institutional arrangements to drive research and innovation in South Africa.

### 2.2 Measurable objective

The Programme is committed to providing the resources – people, programmes, physical facilities, funding and networks – to ensure that critical innovation happens. On a day-to-day basis, it stimulates, identifies and harnesses good ideas, nurtures their development and guides the transformation of those ideas into reality. The Programme measures its successes through the social and economic development interventions that emerge by virtue of its policies, strategies and interventions.

### 2.3 Overview of performance in the 2008/09 financial year

The Research, Development and Innovation Programme is responsible for driving the implementation of three Grand Challenges of the Ten-Year Innovation Plan and three sector-specific strategies, while supporting the establishment of appropriate institutional instruments and the development of appropriate innovation-promoting policies for the National System of Innovation.

As a consequence of the Programme's strategies and policies, (a) investments in innovation centres have given rise to small and growing businesses that are empowering and supporting the development of new industries in the country, (b) collaborations among the players in the National System of Innovation have been

fostered to promote technology developments that will impact on people's lives while embedding the knowledge in South Africa, and (c) new institutional vehicles aimed at narrowing the innovation chasm have been created to promote the commercialisation of research and development outcomes.

### 2.4 Progress against service delivery objectives and indicators

#### **(a) Promote the use of space applications for socio-economic benefits by developing the space technology platform, which involves developing capabilities in space sensor and related technologies**

Work was undertaken by CSIR Defence, Peace, Safety and Security to upgrade the optical bench at Houwteq in preparation for work on space sensors. All the components and subsystems needed for the upgrade have already been acquired and installed on site at Houwteq. The continuation of the work cannot be defined until the acquisition of the Houwteq facilities is concluded (i.e. clarification of legal provisions between the departments of Public Works and Public Enterprises). The South African Earth Observation Strategy portal is also well underway and is expected to be completed and demonstrated by October 2009. The ingestion system for the reception of the China-Brazil Earth Resource Satellite and SAC-C, an Argentinean satellite, is already in place and is currently receiving data from these satellites.

#### **(b) Ensure that South Africa is well positioned to host the Square Kilometre Array by constructing the SKA demonstrator telescope, MeerKAT**

The upgrade of the main access road to the MeerKAT site has been completed. Minor roads on site are nearing completion, as are the on-site accommodation





facilities needed to start construction of the first seven dishes known as the KAT-7 array prototype. An off-site operations centre, terrestrial broadband infrastructure and a grid power design have been completed. In order to protect the astronomy investments and preserve almost pristine conditions for astronomical research, the first draft declarations and regulations have been completed for a broad consultation process with interested and affected stakeholders nationally.

**(c) Contribute to improving health outcomes by formulating a national strategy for health innovation (for the development of new drugs, vaccines, devices and diagnostics, and new techniques in process engineering and manufacturing)**

An executive decision was taken to the effect that for better coordination and alignment, the National Biotechnology Strategy and development of a Health Innovation Strategy have to be revised and consolidated into a single Bioeconomy Strategy. Stemming from the 2005 Cabinet-approved Health Innovation Plan, the Health Innovation Unit established the HIV/Aids Treatment and Prevention Research and Innovation Platform, which is managed from LIFElab. The platform will serve as a coordinating centre and provide strategic research direction to enhance medium-term research and innovation planning and to increase the visibility and attractiveness of HIV/Aids research and funding. The aim is to build capacity, develop and disseminate knowledge, and develop and manage intellectual property, which will ultimately provide innovative solutions to the HIV/Aids pandemic. A Centre of Competence for Tuberculosis has been established to focus on new and innovative diagnostics, drugs and vaccines for this disease. It will be managed from Cape Biotech. The South African Malaria Initiative (SAMI) has also received continued support for research, development and innovation relating to the diagnostics and therapeutics of malaria and understanding of the vector. The overseeing and management of the

SAMI Consortium was transferred from the University of Pretoria to Biotechnology Partnerships. A feasibility study for a Centre of Competence in Medical Devices was completed and this initiative has been managed by Cape Biotech.

**(d) Address the innovation chasm by establishing the Technology Innovation Agency**

The finalisation and enactment of the TIA Act in December 2008 paved the way for a number of crucial achievements during the 2008/09 reporting period. Among these was the establishment of the Interim TIA Project Management Office, which is located at the CSIR, and further project support. A TIA Process Manager, appointed on 14 April 2009, has been tasked with coordinating the migration of the entities that are to be incorporated in the TIA and to oversee the development of various operational policies and processes for the consideration of TIA Board of Directors.

Following the revision of the TIA business case, the agency was scheduled as a Section 3A public entity in March 2009. Exploratory discussions with National Treasury pertaining to certain exemptions for the TIA are continuing.

**(e) Address the innovation chasm by implementing the IPR Act**

Following the enactment of the IPR Act in December 2008, the regulations were published for public comment in *Government Gazette* No. R32120, Notice No. 379 of 2009, in April 2009. The closing date for comments is 29 May 2009. The human resource processes of profiling and grading positions are under way for the establishment of the NIPMO programme as mandated by the Act.

**(f) Address the innovation chasm with the centres of competence**

Throughout 2008, the Department developed centres of competence. The framework provides high-level



guidelines for the establishment and management of CoCs in South Africa. Broadly, a CoC is intended to provide a formal and, as far as possible, contractually secure, physical or virtual platform on which to establish collaborative technology development partnerships between government, industry, and higher education and research institutions, with the explicit aim of technology commercialisation.

Parallel to the development of the CoC Framework, the DST has established a number of CoCs, or CoC-type projects, in a range of technology areas, including nanotechnology, hydrogen and fuel cells, biotechnology, information security, space science, fluorochemicals and titanium.

**(g) *Establishing the National Space Agency***

The South African National Space Agency Act, 2008 (Act No. 36 of 2008), which establishes the South African National Space Agency (SANSA), was promulgated on 15 December 2008. The National Space Agency's primary objectives include supporting the creation of an environment conducive to industrial development in space technologies. Thus far, an establishment office of SANSA has been established at the CSIR and the process of nominating a board of directors is underway.

**(h) *Drive innovation towards energy security for South Africa and the region by developing an Energy Research, Development and Innovation Strategy by June 2008***

The draft strategy was presented and approved for engagement with stakeholders, and will be tabled for approval by Cabinet in the 2009/10 financial year. This strategy, referred to as the Energy RDI Master Plan, is tabulated on page 36.



## 2.5 Service delivery achievements

The delivery achievements of the Programme are tabulated below

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Space Science and Technology</b>	Establish the National Space Agency	The National Space Agency established and operational	March 2009	The Space Science Act was enacted in December 2008 and the Space Agency establishment office has been set up.	
	Launch and implement the National Space S&T Strategy	The National Space S&T Strategy approved and launched and its implementation rolled out	April 2008	The National Space Strategy was approved by Cabinet in December 2008. The implementation plan has been presented to the DST EXCO, and will be rolled out by the Space Agency.	There is a need to obtain firm commitments related to the implementation of the strategy prior to an official launch.
	Launch Sumbandila SAT	Satellite launched	June 2009	The contract had to be renegotiated with the Russians, who proposed July 2009 as the new launch date.	Revision of launch partner strategy.
	Develop a comprehensive funding plan and long-term innovation programme for the South African SKA initiative	Plans approved by the Director-General	December 2008	A comprehensive funding plan and a long-term innovation programme have not been developed due to human resource constraints. Processes are under way to review and extract intellectual property resulting from SKA bid-related contracts, MeerKAT engineering outputs and SKA SA partnerships.	Human resource constraints.



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Innovation Instruments and Planning</b>	TIA and IPR Acts in place as key enablers for the NSI to innovate and commercialise locally	Functioning TIA in place	August 2008	The TIA Bill was enacted in November 2008.	Delays in the legislative process for the enactment of the TIA Act.
		TIA business case approved by National Treasury	August 2008	The business case was resubmitted to National Treasury in February 2009. As a result, the TIA was scheduled as a Section 3A public entity in March 2009.	
		HR migration strategies for DST innovation agencies implemented	August 2008	The TIA Process Manager is currently coordinating the development and finalisation of the migration schedule and policies.	
	Intellectual Property Rights Bill	Intellectual Property Rights Act signed into law	March 2009	The President has approved the Intellectual Property Rights from Publicly Financed Research and Development Act, 2008 (Act No. 51 of 2008).  The Act was published in <b>Government Gazette</b> No. 31745 (Notice No. 1402 of 2008) of 22 December 2008	
	Establish NIPMO	NIPMO established, institutional custodian of the IPR Act	March 2009	Processes are underway for the establishment of the NIPMO programme in the Department.	Delays in the legislative process for the enactment of the IPR Act.



# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Conduct a feasibility assessment for establishing twin innovation centres between South Africa and Korea, other Asian countries, the European Union and the USA	Prepare a report and a Cabinet Memorandum with recommendations for DG approval	November 2008	The principles of the twin centre concept were incorporated into the CoC framework as part of the inbound intellectual property transfer mechanism (whereby international parties are expected to participate on different CoC consortia and in specific projects). Work has started on bringing technology platforms and foreign investment to South African research institutions. The report on twin innovation centres has therefore been replaced by the CoC framework document.	The twin innovation centre concept is no longer applicable due to its incorporation into the CoC framework.
	Manage the interface between innovation instruments and the DST	Monitoring and evaluation, as well as progress reports	Ongoing	Evaluation of established CoCs as a calibration will be completed in April 2009.	
	Sector analysis reports, international sector competitiveness case studies and benchmarking reports	Policy and strategies developed as key enablers, as well as significant progress towards implementation	Ongoing	Programme 5 has completed a number of sector analyses, e.g. diamond and titanium in the mining sector.	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Hydrogen and Energy</b>	Energy RDI Master Plan will address all energy subsectors, including power, liquid fuels, advanced energy technologies and demand-side management	Cabinet approval	May 2008	The Master Plan has been approved by the EXCO and has been circulated among government departments. The implementation plan is being developed.	
		2010 Green Transport Plan	April 2008	The project was terminated.	The uptake was low and therefore the project was terminated.
	Biofuels RDI plan and technology roadmap Operational biofuels demonstrator	DG approval	August 2008	The draft document is ready and forms part of the Energy RDI Master Plan. The demonstrator is not yet operational, but a business plan for the algae-based component has been finalised and one for the biomass-based component is being developed.	
	Long-term technology roadmap for the Hydrogen Fuel Cell Technologies (HFCT) Programme  Identification of components for export to niche markets	DG approval	July 2007	A first draft was circulated at the end of June 2008. A workshop is planned for July 2009 and CoC business plans are being considered for developing the roadmap.	



# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Launch of the Hydrogen and Fuel Cell RDI Technologies Strategy public awareness campaign, which leads to partnerships (internationally and locally)	Website establishment, brochures and booklets with information on HFCT Strategy	April 2008	The HFCT Strategy was successfully launched on 16 September 2008. The launch coincided with INSITE 2008. A website has been developed: <a href="http://hydrogensa.dst.gov.za">http://hydrogensa.dst.gov.za</a> .	
	Contractual agreement with BMW for an HFCT-powered vehicle	Contract for DG approval	May 2008	The project was discontinued.	Demonstration costs with BMW were prohibitive, and as a result the project was discontinued.
	Contractual agreement with Johnson Matthey for the development of a catalysis centre in South Africa	Contract for DG approval	May 2008	An in principle agreement for a feasibility study between Johnson Matthey, Anglo Platinum and the DST has been reached. The study report will be available by September 2009.	
	Establish a partnership with an HFCT manufacturer for the benefit of systems integration	Contract for DG approval	August 2008	Discussions still ongoing with an industrial partner in Germany.	
	Launch of South African-designed electric prototype vehicle	Launch of a prototype	October 2008	The launch took place in September 2008 in Cape Town. The car was also unveiled in Paris, France, in October 2008.	
	Establish an RDI plan on demand-side management energy efficiency, coal roadmap (SANERI)	GE approval DG approval	September 2008	The plan will be completed in November 2009.	Governance changes in SANERI have caused delays in the implementation.



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Nuclear energy RDI plan, three new nuclear research chairs, agreements with the private sector (strategic technology partner), nuclear energy technology roadmap	DG approval	March 2008	Although a strategy for advanced technology development in the power sector was developed and received for the DG's and the Minister's approval, a detailed nuclear RDI strategy cannot be developed until Eskom's technology of choice has been announced. Eskom has decided to stop the procurement process.	
<b>National Advisory Council on Innovation</b>	Overview of the state of the NSI	Report approved by the council	February 2009	An assessment of the status of the NSI based on indicators.	
		Advice to Minister	March 2009	<b>South African Science and Technology Indicators 2008</b> was presented to the Minister in October 2008.	
	Review of the state of S&T policy interactions in Africa and their implications for South Africa	Report approved by the council	November 2008	Research commissioned in January 2009.	
		Advice to Minister	February 2009	To be submitted in May 2009.	
	South African science system advice	Report approved by the council	September 2008	Report submitted in July 2008, approved in September 2008.	
		Advice to the Minister	November 2008	Advice submitted to the Minister in October 2008.	



# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Biotechnology and Health Innovation</b>	Development of a Health Innovation Strategy	Health Innovation Strategy for South Africa	October 2008	For better coordination and alignment, revision of the National Biotechnology Strategy and development of a Health Innovation Strategy will be consolidated into a single Bioeconomy Strategy. The development of the Bioeconomy Strategy will be informed by a research agenda, which will emerge after completion of the Technology Capability Audit. A secretariat has been appointed for the development of the capability audit and the strategy and both processes will proceed in parallel.	
	Revised Biotechnology Strategy	Revised Biotechnology Strategy approved by the Minister	September 2008		
	Develop a coordinated biotechnology implementation R&D agenda	Implementation strategy approved by the DG	September 2008		
	Facilitate the implementation of the Health Solution Innovation Strategy	Detailed implementation framework approved by the DG	May 2008		
		Establishment of collaborative health RDI initiatives involving universities, science councils and the private sector, which will develop products and services for the health industry	Four CoCs established by December 2008, including a CoC for functional genomics	Business plans for the following CoCs and/or platforms have been approved, and funds transferred: TB, malaria, medical devices and the South African HIV/ Aids Research and Innovation Platform. A feasibility study and proposal for a nuclear medicines CoC is also under consideration. A bioinformatics and functional genomic platform has been established in the Cape Biotech Trust.	





Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	DST-approved implementation plan for the Farmer to Pharma Grand Challenge	Approved document	June 2008	Concept document and implementation plans for the Farmer to Pharma Grand Challenge have been approved.	
	Establish the Biosafety and Structural Biology platforms	DST-approved business plan for the establishment of the Biosafety and Structural Biology platforms	May 2008	Biosafety Platform established in July 2008.  A draft proposal for the establishment of a Structural Biology Platform has been completed.	



### PROGRAMME 3: INTERNATIONAL COOPERATION AND RESOURCES

#### 3.1 Purpose

The International Cooperation and Resources Programme develops and services bilateral and multilateral relationships and agreements in science and technology to strengthen the NSI and enable a flow of knowledge, capacity and resources into South Africa and Africa.

#### 3.2 Measurable objective

The Programme increases flows of scientific knowledge and resources to South Africa by participating in joint programmes. The following achievements are noteworthy:

##### **(a) Overseas Bilateral Cooperation**

The Overseas Bilateral Cooperation (OBC) sub-programme has implemented over 100 research and development projects. It has also identified priority countries through strategic workshops and sessions, and four country engagement strategies have been developed through internal consultations.

Bilateral relations were strengthened with the following countries: the UK (a workshop with multilateral cooperation potential), Russia (high-level delegation to align strategic and implementation objectives), Oman (first joint committee), Germany (arrival of a German technical assistant based at DST), Belarus (implementation of a laser technology project and high-level delegation visit to the National Laser Centre), Poland (joint technical committee), Japan (high-level technical delegation, first African Science and Technology Ministers' meeting) and India (astronomy workshop).

In addition to bilateral relations, the OBC has been involved in the India-Brazil-South Africa (IBSA) partnership. The IBSA focus areas are biotechnology,

nanotechnology, HIV/Aids, tuberculosis, malaria and oceanography. The ministers from the three countries resolved to create a seed fund of US\$1 million annually from each country to support innovation projects and other modes and areas of collaboration. Other activities under IBSA include the IBSA Dialogue Forum, the third IBSA Summit, the fourth Science and Technology Ministers' meeting, and an HIV Aids workshop to promote south-south cooperation.

The International Science, Innovation and Technology Exhibition 2008 (INSITE 2008) was used to attract overseas partners to exhibit their scientific research and innovative products.

##### **(b) Multilateral Cooperation and Africa**

South Africa became an associate member of the European Molecular Biology Conference (EMBC) in February 2008, and already the South African molecular biology community has started to benefit. For example, four South African long-term fellowship applications were received by the EMBC, four researchers attended and participated in EMBC-sponsored courses, workshops and conference series in 2008, and three South Africans were invited as guest speakers to these EMBC activities.

Several researchers were recruited or seconded to the Cape Town component of the International Centre for Genetic Engineering and Biotechnology (ICGEB) in 2008: one scientific coordinator for immunology and infectious diseases, one group leader for the biotechnology transfer unit (seconded from Trieste), two administrative staff members and three research technicians. The component is in the process of recruiting three new group leaders in the areas of transcriptome, cellular immunology and cancer genomics.

The Non-Aligned Movement (NAM) is one of the south-south cooperation organisations benefiting the

National System of Innovation. In 2008, South Africans were afforded the opportunity to participate in five NAM science and technology projects and workshops in areas such as energy conservation, technology transfer, water sciences, biodiversity and women in science and technology.

Two South African collaborative research project proposals were sent to the International Institute for Applied Systems Analysis (IIASA). In addition, five postdoctoral applications were forwarded to IIASA, one of which has already been approved for funding, with the other four currently under review. IIASA's focus is on energy and technology, the environment and natural resources, and population and social dynamics.

The Department, as Chair of the Southern African Development Community (SADC) Science and Technology Group, also led the following activities: A South Africa-Namibia technical committee meeting was hosted to develop a plan of action. A joint technical committee meeting in Zambia was attended to develop the plan of action. South Africa hosted the SADC meeting of ministers responsible for science and technology, and tabled the plan of action for South Africa's chairmanship during this meeting. A SADC working group meeting was also hosted to draft a five to ten-year plan for SADC.

The Department continued to support the NEPAD flagship projects. The specific projects supported were the African Institute for Mathematical Sciences, the African Laser Centre and the Southern African Network for Biosciences. The Department also participated in the NEPAD/Southern African Regional Universities Association round table discussion on the implementation of the consolidated plan of action and engineering capacity-building for manufacturing, as well as the Africa-EU ministerial troika meeting at the African Union Commission's headquarters in Ethiopia. The AU Commissioner for Human Resources, Science and Technology was also hosted in South Africa. The

DST promoted science and technology cooperation with specific countries through bilateral cooperation in Africa. There were interactions with the following countries: Mauritius (technical visit), Mozambique (joint call and joint committee meeting), Malawi (workshop on indicators training with Centre for Science, Technology and Innovation indicator specialists), Southern Sudan (Department of Foreign Affairs-led multisectoral visit), the Democratic Republic of Congo (interdepartmental meeting), Rwanda (finalising a bilateral agreement), Egypt (planning an exploratory visit to South Africa), Mali (approval of further funding for the Timbuktu project), Congo Brazzaville (technical and ministerial visit) and Sudan (joint bilateral commission).

### **(c) International Resources**

The Department received the first allocation of the EU sector budget support funding following the signing of the financing agreement by National Treasury. The funds are to be used to support the Department's initiatives on science and technology for poverty alleviation. At the same time, the SA-EU relationship remained positive, with the Department participating in the first ever SA-EU Summit held in Bordeaux, France. The Department also organised the only side event at the summit in partnership with the French Institute of Research and the EU Research and Technology Development Directorate-General. Dialogues are underway between the two partners in the areas of space science, bioeconomy and energy. Furthermore, the Department plays a crucial role in ensuring that the whole sub-Saharan region benefits from EU research funding opportunities, including the European Union Seventh Framework Programme (FP7) and the Africa, Caribbean and Pacific states science and technology capacity-building programme. During the period under review, the Department organised workshops and invited experts from the EU to talk to delegates from South Africa and the rest of Africa on how to access funding from these instruments. Through projects such as the European-South African Science



and Technology Advancement programme, CAAST-Net and INCONTACT, the Department provided training and the mentoring of national information staff in sub-Saharan Africa. To date, a number of regional projects between African institutions and the EU have been initiated and South Africa has received just over R100 million in allocations for FP7 projects.

The DST signed an agreement with the Finnish Ministry of Foreign Affairs on the South Africa-Finland Network for Biosciences (BioFISA) programme. BioFISA programmes will be implemented in SADC to develop biosciences capacity and to facilitate the process of bringing innovative bioproducts and solutions to the market, mainly where these address sustainable regional development challenges, including food security, environment and health. The government of Finland will contribute R3 million towards this programme. The Cooperation Framework on Innovation Systems between Finland and South Africa (COFISA) continued to play a significant role in bridging innovation capacity gaps in the three pilot provinces, namely Gauteng, the Eastern Cape and the Western Cape. During 2008/09, COFISA contributed towards the development of the South African Science Park Strategy and the Gauteng Innovation Strategy. The South Africa-Finland Knowledge Partnership on ICT Programme (SAFIPA) got under way officially with the appointment of the Finnish chief technical advisor and the South African national coordinator. SAFIPA has held consultations with the DST and other NSI stakeholders, including those at provincial level. Notable engagements were with the offices of the Limpopo and Free State premiers, the Department of Communication and the Presidential National Commission on Information Society.

South Africa, through the DST, continued its leadership in the Group on Earth Observations, an intergovernmental body with the mandate of implementing the Global Earth Observation System of Systems (GEOSS). The implementation of GEOSS will see the collection,

analysis and dissemination of Earth observation data in a coordinated manner; thus contributing towards the mitigation of disasters (man-made and natural).

Through the existing knowledge partnership with the World Bank and the government of Finland, the DST organised a regional conference on science, technology and innovation aimed at developing tangible interventions towards making African economies more knowledge-based. The conference was well attended by delegates from the donor community and representatives of African states and the South African science system. The DST, in partnership with SAP, launched the SAP/CSIR Meraka Unit for Technology Development in Brussels, with the aim of showcasing a model partnership for technology and human capital development. The relationship has so far resulted in the training of graduates in technology development, specifically for developing economies such as South Africa's. The Department also signed a letter of intent with Microsoft South Africa, outlining broad areas of cooperation.

On the official development assistance front, the establishment of the Regional Initiative for Capacity Development (RICAD) created a platform for productivity improvement training, which is also aimed at improving the employability of unemployed graduates. The first and second phases of the training have gone well and feedback from these is now used to benchmark the third phase of training. A cost-benefit analysis was done for the French South African Institute for Electronic Engineering (F'SATIE) model, which led to the development of the Graduate Skills Development Programme. This programme was duplicated at the Cape Peninsula University of Technology. The F'SATIE programme aims to increase the numbers of master's and doctoral graduates produced by the education system in scarce skills areas. Other highlights under developmental partnerships include the signing of a memorandum of understanding between Hitachi and the DST on three scholarships for electrical engineers.

To this end, two candidates have been selected for 2009. The potato culture project was launched in Lesotho, with the aim of assisting Lesotho to develop capacity in plant genetic conservation and utilisation through tissue culture. The Department is at an advanced stage in the implementation of a similar programme with Malawi. An HIV modelling project has been initiated in partnership with the Canadian International Development Agency and the DST, and South African Centre for Epidemiological Modelling and Analysis. The project will help in the development of innovative and quantitative methods to support a more integrated evidence-based national response to the epidemic of HIV/Aids. This is being done in partnership with Statistics Canada and the World Health Organisation. A memorandum of understanding was signed between the Australian Government Development Aid Programme (AusAID) and the DST.

Three projects are implemented under the relationship: student support, a technical delegation from the South African National Energy Research Institute (SANERI) and the training of science centre managers from South Africa and Lesotho.

### 3.3 Service delivery objectives and indicators

**(a) Increase international funding for science and technology in South Africa by increasing international research funding, foreign investment and donor support from R94 million in 2007/08 to R150 million in 2010/11**

The amount leveraged from international sources in 2008/09 was R338 million.

**(b) Increase and strengthen South African participation in multilateral organisations and forums by establishing three new programmes for student fellowships, scientist exchanges and science policy courses for**

#### **South Africa and the region**

- A science policy course was held in May 2008 for African delegates through the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the United Nations Industrial Development Organisation (UNIDO).
- Science student camps, based on the UNESCO International School for Young Physicists, were held in July 2008.
- South Africans participated in selected EMBC human capital development (HCD) programmes over the period under review.

**(c) Increase and strengthen cooperation in Africa and with Eastern Europe, the Gulf region and Asia by establishing 10 new bilateral projects each year**

A total of 115 new bilateral projects were established in 2008/09.

**(d) Establish the South African chapter of the African Initiative for Capacity Development (AICAD), an institution that augments the education and research function of universities and other institutions to accelerate human capital development through training and knowledge-sharing**

RICAD was established as a project to develop and test the required functions before an institution with the same purposes is established.





## 3.4 Service delivery achievements

The delivery achievements of the Programme are tabulated

Subprogramme	Output	Measure/Indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Bilateral Cooperation</b>	Realigned and expanded functional relationships	Focused relationships for the achievement of the Grand Challenges with countries outside Africa	Ten bilateral agreements realigned or expanded  Five new agreements/ cooperative instruments signed	Bilateral agreements with Norway, Slovakia, Russia, Poland, Germany and Norway were realigned through joint committee meetings.  One agreement was signed with Saudi Arabia.  A programme framework was signed between the Russian Federation and the DST, with a focus on DST priority areas.	The signing of new agreements was constrained due to the country prioritisation process of International Cooperation and Resources.
	Support for capacity development	Expanded graduate model	Five entities in new areas established	One entity was created in electronic engineering at the Cape Peninsula University of Technology. This is being extended to a model for space engineering.	There was a need to reconceptualise the graduate model in partnership with Programme 4, resulting in slower progress, but further roll-out of the model is expected in 2009/10.
		Functional AICAD platform	200 new scientists trained  Roll-out of AICAD in SADC	80 students were trained in productivity, two of whom were employed by the private companies involved in this training partnership.	Due to the delay in awarding the tender for AICAD, the training programme was not implemented as originally planned.
	Improved cooperation and integration with other NSI players	Joint projects with other programmes in the DST and other NSI players	60 new projects initiated	51 projects were initiated in the Americas and Asia, and 86 in Europe and the Gulf.	



Subprogramme	Output	Measure/Indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Multilateral and Africa</b>	Maximise participation in S&T multilateral organisations	Enhanced participation in multilateral organisations  South Africa promoted as a preferred S&T destination for global projects	Two new global projects secured to support implementation of the Ten-year Innovation Plan	<p>The DST will host the 11<sup>th</sup> TWAS General Conference, which aims to promote north-south and south-south cooperation in STI.</p> <p>The DST is part of the OECD Committee for Science and Technology Policy Steering Group on International Cooperation to Address Global Challenges. The workshop focused on the status of S&amp;T research in various fields and on existing governance mechanisms in the different multinational organisations. The DST will also lead an OECD Global Science Forum project on S&amp;T cooperation with developing countries. The DST's participation in this project will contribute to the achievement of Ten-Year Innovation Plan goals.</p>	



## SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/Indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Deepen and strengthen Africa cooperation in S&T	Functional bilateral agreements established in each of the regional economic communities of the AU and active participation in the SADC and AU structures	Five new bilateral projects/ programmes	<p>Two joint calls for proposals with Kenya and Mozambique were published.</p> <p>Four new bilateral projects with Mozambique were established.</p> <p>Stellenbosch University serves as the administration hub for the Southern African Centres of Excellence in Water Science.</p>	
	Joint research projects with international partners (Africa and the rest of the world) to support the Grand Challenges of the Ten-Year Innovation Plan and related initiatives in the NSI, such as the NRDS	Increase the number of joint bilateral/ trilateral and other international projects to support the Grand Challenges of the Ten-Year Innovation Plan	<p>100 new joint bilateral/ trilateral and other international research projects</p> <p>At least four projects are in the areas of responsibility of South Africa in the IBSA framework</p>	<p>Total: 125 projects</p> <p><u>Africa (4):</u> Algeria: 3, Lesotho: 1</p> <p><u>Asia and Americas (35):</u> China: 8, Korea: 6, Argentina: 16, Japan: 5</p> <p><u>Europe and the Gulf (86):</u> Slovakia: 8, Switzerland: 16, France: 13, Hungary: 10, Poland: 11, Spain: 12, Germany: 5, Romania: 10, Belarus: 1</p>	



Subprogramme	Output	Measure/Indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Functioning multilateral engagements for South Africa to participate in and promote the strategic priorities of the Ten-Year Innovation Plan and related initiatives in the NSI such as the NRDS	The number of new functioning multilateral partnerships	Three new functioning multilateral instruments include:  • ICGEB Cape Town Component, • SADC STI Desk,  • UNIDO and UNESCO science policy training for SADC, and African STI reviews;  Consortium for Science, Technology and Innovation for the South (COSTIS)	The following three multilateral instruments are functioning:  • ICGEB Cape Town Component • SADC STI Desk  • UNIDO and UNESCO science policy training for SADC, and African STI reviews	
<b>International Resources</b>	International resources such as research funds, location of global infrastructure, knowledge and human capital for S&T in South Africa	International funds leveraged for South African S&T	R50 million in funds and in kind from international sources	Development funding: R154 million, in kind: R5,9 million.  Sector Budget Support (SBS): R128 million,  FP7 funding: R50 million.	Including SBS, COFISA and SAFIPA, but excluding FP7 funding, because the EC has not officially released the numbers for some of the calls.
<b>Establish and strengthen multilateral instruments to the benefit of the NSI</b>	Functioning instruments that will enable the HCD required by the Ten-Year Innovation Plan	Number of functioning HCD instruments	Four functioning HCD instruments: AICAD, JIPSA functional areas, research chairs bilateral projects	The following HCD instruments are functioning:  • RICAD (a strategically adjusted AICAD)  • An expanded graduate model  • Bilateral projects  • JIPSA functional areas	



## SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/Indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Establish and strengthen HCD instruments to the benefit of the NSI</b>	South Africa as a preferred destination for the location of international science, technology, and innovation infrastructure	<p>Progress with the SA SKA bid, including investment in MeerKAT</p> <p>Identification of and progress in leveraging other infrastructure hosting opportunities (e.g. SANReN)</p>	<p>Exchange of 20 experts in support of MeerKAT and SKA</p> <p>Submit an international lobbying and partnership strategy for MeerKAT and SKA in August 2008</p>	Although a final lobbying and partnership strategy for MeerKAT and SKA was not submitted, there was significant progress in the actual lobbying and partnership processes, both in Africa and the rest of the world.	
<b>Support for locating international science, technology and innovation infrastructure in South Africa</b>	An international engagement strategy to guide the international activities of the NSI	Completion of research and comparative studies, e.g. an international cooperation strategy	Submit an international cooperation strategy in July 2008	The international cooperation strategy has not been submitted yet.	A range of other strategic initiatives needed to be completed to ensure a more comprehensive and final international cooperation strategy.





## PROGRAMME 4: HUMAN CAPITAL AND KNOWLEDGE SYSTEMS

### 4.1 Purpose

To develop and implement national programmes to produce knowledge, human capital and the associated infrastructure, equipment and public research services to sustain the country's NSI.

### 4.2 Measurable objective

Develop and maintain a highly competent and representative cohort of scientists.

The following achievements are noteworthy:

#### (a) Human Capital and Science Platforms

Previously, SARChI, a critical instrument in the area of HCD awarded 72 research chairs in key areas aligned to government strategies. The process of awarding a further 10 research chairs is currently underway, ultimately bringing the cumulative number of SARChI chairs to 82 by the end of the 2008/09 financial year. This initiative is set to revitalise the NSI through the injection of expertise and funding. The seven centres of excellence continue to foster the exploitation of cross-disciplinary and cross-institutional collaboration among researchers and institutions. An eighth centre of excellence, focusing on global change, is being established. The Honours Bursary Programme supported 271 students in 2008, with 85% of all awards given to black students and 55% allocated to females. This programme funded 262 students in 2007 with a throughput rate of 82%. Research grants and postgraduate bursaries were awarded to support the African Origins Platform and marine biosciences.

As a consequence of the DST's policies and strategies, investments were continued in the development of a healthy and diverse flux of young people seeking and finding careers in science and technology.

The Professional Development Programme (PDP) is aimed at increasing research capacity among young professionals by placing them in science councils. A total of 68 students were placed in 2008, bringing to 197 the number of beneficiaries to date. On average, 76% of benefiting students are black and 50% are women. The Postdoctoral Programme supported 70 (30 continuing and 40 new) postdoctoral fellows at various NSI institutions in 2008. When the latter cohorts have completed the two-year programme, the number of funded postdoctoral students to date will be 110. A total of 125 unemployed SET graduates were employed at 22 science centres.

The Youth into Science Strategy continued to be implemented through the National Science Week plan for 2005 to 2009, the national roll-out plan for the establishment of a network of science centres, the national plan to place and support graduates, the national plan for science, technology, engineering and mathematics Olympiads, competitions and camps, the S&T educators' support plan, and the national plan for the supplementary tuition programme. FESTOC, the National Youth Service and the University of KwaZulu-Natal Science Centre were launched. Educators and learners from South Africa attended summer camps in Canada. Some disadvantaged learners received German bursaries to study engineering and science at higher education institutions. In order to contribute to an environment enabling existing science centres to respond adequately to the Youth into Science Strategy, 17 science centres across eight provinces received project grant funding. Four Japanese volunteers have been deployed in three science centres to impart their exhibition development skills to the local science centre community. South Africa participated in the Lesotho Science, Engineering and Technology Week as part of the implementation of SADC's science and technology agenda in September 2008. The South African Minister



of Science and Technology gave an address during the Lesotho SET Week. Twenty-five science centre staff members (20 from South Africa and five from Lesotho) participated in two week-long training sessions for science centre managers, jointly funded by the DST and the Australian government development agency, AusAid. At the 5<sup>th</sup> Science Centre World Congress, held in Toronto, Canada, in June 2008, South Africa was given the mandate to begin preparations to host the sixth such congress in South Africa in 2011. Six educators and three learners were selected to attend summer camps in Canada. National Science Week 2008 was held in more than 67 sites countrywide. Some 195 000 people participated, about 89% of whom were learners. Over three million people were reached through electronic and print media.

#### **(b) Emerging Research Areas and Infrastructure**

One of the key milestones in the endeavour to address research and development infrastructure needs was the launch of the South African Strategic Research Infrastructure Forum (SASRIF). The primary objective of the forum is to guide, monitor and assess infrastructure needs and requirements across the NSI and make strategic recommendations to the DST in this regard.

The development of nanotechnology moved into a higher gear through the establishment of a Nanotechnology Health, Safety and Environment (HSE) Research Platform, and the Nanoscience Centre. The HSE Platform will work to ensure the responsible development of nanotechnology, while the Nanoscience Centre will bridge the nanoscience and nanotechnology teaching and training gap and create a pool of young scientists ready to pursue careers in this field. As part of ensuring the responsible development of nanotechnology, a Nano Ethics Committee has been established and is in the process of finalising the nanotechnology ethics guidelines, which will guide the development and application of nanotechnology in the country. The approval of both

the Nanotechnology Strategy Implementation Plan and the Nanotechnology Research Plan were major milestones. These instruments will ensure that South Africa vigorously pursues nanotechnology development programmes and research agendas for the realisation of the strategic objectives.

#### **(c) Indigenous Knowledge Systems**

During the period under review, the National Indigenous Knowledge Systems Office was responsible for the development of policy and legislation regarding the promotion, development and protection of indigenous knowledge. The process of developing sui generis legislation for the protection of IKS duly commenced, but this process has been temporarily halted due to the delay in Cabinet approving the Intellectual Property Rights Amendment Bill of the Department of Trade and Industry.

An advocacy and public awareness programme rolled out through the National IKS Expo was hosted at the Transvaal Museum, which attracted 23 exhibitors and over 12 000 patrons. Two provincial nodes were established in Limpopo and North West. The provincial node in Limpopo, through the office of the Premier, will co-host the National 2009 IKS Expo in Polokwane.

The Bioprospecting and Product Platform has been developed and strengthened. A pilot study is being consolidated and integrated into the Farmer to Pharma Grand Challenge. A number of leads in traditional medicines, nutraceuticals and cosmeceuticals are currently being developed. A Research Chair in African Traditional Medicines and Knowledge Systems Studies has been established. The registration of a Bachelor of IKS degree with the South African Qualifications Authority is the single-most important achievement under this rubric.

During the period under review, NIKSO, in collaboration with KPMG, successfully completed a national audit of databases with indigenous knowledge content.

NIKSO's projects are currently subjected to a monitoring and evaluation process. These objectives are expected to serve as a bridge for the innovation chasm by building human capital for the production of knowledge and wealth creation, and at the same time leading to the realisation of the Farmer to Pharma Grand Challenge.

#### **4.3 Service delivery objectives and indicators**

##### **(a) Build human capital for research, development and innovation by developing a Science, Engineering and Technology Human Capital Development Strategy by May 2008**

Much progress was made with the drafting of the Science, Engineering and Technology (SET) Human Capital Development (HCD) Strategy, and the mapping of the key strategic approaches to the development of SET research skills, as articulated in the National Research and Development Strategy (NRDS), was completed by May 2008. In addition, key stakeholder consultations followed. However, it emerged that the strategy was lacking in the development of innovation skills and innovation-enabling skills. Innovation skills are the core SET skills, competences and abilities required for developing and designing new products (technologies), processes and services. Innovation-enabling skills facilitate the conversion of knowledge or ideas into commercialised products, processes or services, including intellectual property, patenting, licensing, project management, commercialisation and entrepreneurial skills. The latter are key in the realisation of the objectives of the IPR Act.

Agreement on the definition of innovation skills and innovation-enabling skills has been time-consuming, and clearly the development of these skills does not occur in a vacuum. Clarity on the implementation plans of the Ten-Year Innovation Plan Grand Challenges has shed light on the instruments that will be used to develop these

skills, as has clarity on the cross-cutting skills shortages that will need to be addressed. The interconnectedness of the human capital development needs of the National System of Innovation was underestimated when this target was set, which was done well before the implementation plans of the Grand Challenges were finalised. The strategy is to be tabled for submission to Cabinet by August 2009.

##### **(b) Increase the number of researchers by placing 210 research chairs in the NSI by 2010**

SARChI, a key instrument in developing human research capital, has been slow in its implementation. The original plan was to award 210 research chairs by the 2010/11 financial year, with implementation scheduled for the 2011 academic year. Whereas 72 research chairs were awarded in previous financial years, in 2008/09 funding for only 15 to 18 research chairs was available, in contrast with the targeted 70. Owing to the inability of the affected institutions to establish appropriate research chairs, the number has been further reduced to 10. These will be awarded from the 2008/09 financial year advertisement, bringing the total number of chairs to 82. Since no additional funds have been allocated for new research chairs in 2009/10, 128 research chairs will have to be awarded in the 2010/11 financial year to reach the target of establishing 210 research chairs by 2010.

A number of fundraising interventions have been devised. The DST has decided to use 30% of its expenditure on HCD. This will greatly increase the number of research chairs in priority areas of the NRDS and the Ten-year Innovation Plan. Furthermore, other government departments engaged in SET HCD activities will be targeted for promoting this instrument and, to this end, presentations have been made to some. Industry has already become involved, with at least six of the current 15 research chairs fully funded by an industry partner. At a strategic level to promote a wider reach, more impact



and coordination, a SARCHI marketing strategy is being drafted. Local and international advertising will be done for institutions that are unable to attract the appropriate research chairs.

**(c) Promote investment in human capital  
by increasing the number of centres of  
excellence from seven to nine by 2010 and by  
producing 3 000 SET PhDs a year by 2018**

Only one new centre of excellence was established: Global Change. This is the eighth CoE to be established. The target of nine could not be reached. As this is a key instrument for knowledge development and HCD, it is hoped that the DST's strategy of using 30% of its budget for HCD will ameliorate the situation in the following ways:

- Provide a working research network (SANReN) for research in South Africa by connecting three higher education institutions and three science councils.
- Improve the quality of research by placing at least 60 pieces of high-value research equipment in a minimum of 20 research institutions by 2010.
- Preserve indigenous knowledge by establishing an indigenous knowledge systems database, two laboratories, two CoEs, two new research chairs, a National Bioprospecting Platform, and a Bachelor of Indigenous Knowledge Systems qualification by 2010.



#### 4.4 Service delivery achievements

The delivery achievements of the Programme are tabulated below.

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Human Capital and Science Platforms strategic objectives:</b>  Human resource development, knowledge production and protection, and innovation skills	Increased number and improved representativeness of human resources in SET	An increased number of young people and members of the general public will have participated in science awareness campaigns	Increase to 200 000 from 170 000 in the last year	195 000 (5 000 short of the business plan's 200 000 target) people visited the NSW sites countrywide.	The implementation model is heavily dependent on transport (for learners). Participation was lower because of steep fuel hikes during 2008. However, more reach into rural areas was achieved and over three million people were reached through the media.
		Increased number of talented young people from disadvantaged backgrounds (i.e. Africans, girls and disabled people, especially from under-serviced areas) identified through camps will have been prepared for careers in SET	Two more science centres from 15 last year will have benefited from programme support  Eight more staff members (from 52 last year) from local science centres will have benefited from the science centre capacity-building programme	Grants were awarded to 17 existing science centres.  38 more science centre staff members were trained on exhibit development before the deadline cited in the performance agreement.  In addition, 25 science centre staff members underwent science centre manager training.	





## SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
			200 more learners from 1 600 in nine provinces will have participated in camps	The performance exceeded the target by 200, with 2 000 learners participating in mathematics and science camps.	
			114 more maths and science educators from 896 from the previous year to participate in the ESP programme	651 (exceeding the target by 251) mathematics and science educators from disadvantaged backgrounds were equipped with the necessary competencies.	
			1 350 learners with talent and potential will have benefited from supplementary tuition	2 550 learners participated in the supplementary tuition programme that was implemented for the first time in the 18 DST-adopted Dinaledi schools.	
			10 000 more copies of SET Careers magazine (compared to 30 000 in 2007/08)	40 000 career booklets were distributed countrywide.	
			FESTOC will have been launched	FESTOC was launched by the Minister during Youth Month	
		Increased number of unemployed science graduates participating in the NYS programme	250 volunteers in 2008	A cumulative total of 124 graduates participated in the NYS.	There was no new intake owing to funding constraints.



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
		Increased number of highly competent and representative cohort of scientists and researchers for the NSI	One more CoE approved (seven were approved in 2007/08) 70 new research chairs (72 approved in 2007/08)	One new CoE is being finalised.  Only 10 new research chairs are being awarded.	The discrepancy is only one month's lag.  Financial constraints, coupled with the inability of institutions to attract appropriate candidates.
		Increased number of postgraduate students in SET	360 honours (280 in 2007/08), 80 master's and PhD (68 in 2007/08) students	271 honours students were supported.  50 master's students were supported and 68 PhD and postdoctoral students were supported by the PDP.	Discrepancy in honours numbers is a result of the deduction of service fees by the NRF, which was not done in the previous year as this was in the pilot stage.
		Finding meaningful employment for unemployed science graduates	100 new interns (90 in 2007/08) and 250 volunteers through the National Youth Service (125 in 2007/08)	92 interns were supported, exceeding the target by two.  A cumulative total of 124 young people were deployed in 2008/9.	Due to financial constraints, the target of finding employment for 100 more unemployed science graduates, as stated in the business plan, could not be reached under the NYS.



## SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Enhanced knowledge production and protection capacity in SET	<p>Research papers in international journals</p> <p>Strengthened multidisciplinary research in identified science platforms and scientific disciplines</p>	<p>Paper per centre of excellence or research chair</p> <p>20 honours, 15 master's and 10 PhDs in identified science platforms and scientific disciplines</p> <p>10% increase in students in fields related to African Origins</p>	<p>20 research outputs were reached.</p> <p>38 postgraduate students were supported by African Origins and 83 by Antarctica, 12 MSc and nine PhD students were supported in marine sciences, 15 honours and four MSc students were supported by the astronomy platform.</p>	
	Enhanced innovation skills for the NSI	<p>Increased patenting, intellectual property and commercialisation skills to support RDI</p> <p>Increased entrepreneurial, financial, project and business communication skills to support RDI</p> <p>Increased number of research technicians and technologists</p>	<p>40 students will have benefited from interventions that equip them with patent and copyright skills</p> <p>40 students enrolled at universities of technology (UoTs)</p> <p>40 students enrolled at UoTs</p>	<p>Seven students were awarded honours and master's bursaries in Innovation and Technology Management.</p> <p>50 UoT students benefited through an experiential learning programme and have been placed at technology stations and private companies, exceeding the target by 10.</p> <p>25 master's students are registered in Disaster Management at the University of the Free State for the 2009 academic year.</p>	Lack of finalisation of the innovation-enabling skills framework has retarded original plans in this area.



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<p><b>Emerging Research Areas:</b></p> <p>To explore, introduce, support and mature at least two research areas by 2018 to strengthen the country's future economic competitiveness, improve the quality of life of its people, and to transform it into a knowledge-based economy.</p>	Successful implementation of the National Nanotechnology Strategy	The implementation plan defines the enablers and targets necessary for the realisation of the strategy objectives. These include the establishment of nanoscience and technology innovation centres, research and innovation networks, HCD programmes, and flagship projects directed at the industrial and social needs of the country	Plan finalised in May 2008.  Target group: students, researchers, scientific workforce and industry	The plan has been finalised and approved.	
	Development of a research plan that will articulate the research questions aimed at addressing challenges as identified in the strategy and steer the research efforts to deliver on the objectives of the strategy	Plan finalised with target groups being students, researchers, scientific workforce and industry	By May 2008	The plan has been finalised and approved.	



# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Evaluation of the progress of the nanotechnology innovation centres in terms of their mandate providing researchers with advanced instruments for design, synthesis, characterisation, modelling and fabrication, as well as being CoEs for HCD	Progress report – evaluation of nanotechnology innovation centres	Ongoing: progress assessed annually	This process is being adhered to.	The assessment of progress for the 2008/09 year will be completed in May 2009.
Ensure an awareness of the emerging research areas in terms of their scientific, economic and social benefits to 85% of the target population when it reaches maturity	Public awareness programmes aimed at ensuring easy access to information and the creation of a climate conducive to public discourse	Nano Awareness Plan finalised with target groups being the youth, learners, students, academics and the general public	Plan finalised by May 2008 and being implemented	The development of the awareness plan could not be finalised. It is scheduled to be finalised by August 2009, but identified projects have already commenced.	The process of finalisation of the plan has been delayed pending the finalisation of STEMI, the comprehensive DST awareness plan.
<p><b>Human Capital Development:</b></p> <p>Use the emerging area programmes to train 450 master's and 150 PhD students by 2018</p>	HCD and knowledge generation through research chairs	The necessary and essential mechanism to enhance and expedite focused HCD and research output	<p>24 master's and 12 PhD students in nano research in 2008</p> <p>A minimum of five publications (papers and patents) per chair per year</p> <p>Performance assessed annually and renewal every five years</p>	A framework for assessing the performance has been finalised and workshopped to nanotechnology research chairs. It is against this framework that the performance of research chairs for the 2008/09 year (and subsequent years) will be assessed. The assessment process is scheduled for May 2009.	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
Stimulate and support research methodology; approaches to mature at least two emerging research areas by 2018	Establish a Nano Advisory Board to provide strategic oversight and advice on development of nanotechnology in South Africa	Board established	Submission approved and appointment of board by March 2008	The board has been established and held its first meeting in January 2009.	
		Nanotechnology institute feasibility study report: Commercialisation and manufacture of nanoproducts; Infrastructure, HCD and public awareness	Report completed by March 2009	This has been put on hold, pending further consultation.	
	Develop new research areas	Development of a framework for the selection and support of new research areas  A plan for the establishment and development of the photonics and synthetic biology research areas for applications in, for example, ICT and health	Framework completed by December 2008  Plan finalised by August 2008	The framework has been discussed by the DST EXCO and finalised.  The draft strategy has been presented to the DST EXCO for Photonics. The final draft is expected to be presented to the EXCO for approval by June 2009. For synthetic biology, the draft plan has been prepared and will be presented to the DST by May 2009.	Delay of the Photonics Strategy due to the reworking of the plan as suggested by DST EXCO.  Finalisation of the Synthetic Biology Plan was delayed, as it required wider stakeholder consultation.





# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
		Develop the aptamer research area to exploit the binding properties of aptamer molecules for therapeutic and diagnostic applications in cases such as HIV/Aids	Proposal finalised by May 2008	Completed. Progress of the project is monitored on an ongoing basis.	
		Proposal for the development of RoboCup: To enhance robotics research in South Africa	Proposal approved by May 2008	Completed. Progress of the project is monitored on an ongoing basis.	
		Proposal for the establishment of an innovation lab to provide strategic direction and intelligence on high-impact innovation possibilities in South Africa	Proposal approved by May 2008	The proposal has been approved and seed funding provided.	
	Cyberinfrastructure: The establishment of knowledge networks and the provision of computational power to facilitate the transmission of research information and data storage	A fully functional high-performance computing node in Cape Town that provides computational power to researchers, scientists and students to perform simulations, modelling and data analysis. These functionalities are driven by three flagship projects	Commissioning of an IBM BlueGene 14-teraflop, high-performance computer by March 2009	The IBM BlueGene computer is in place and functioning. A BlueGene steering committee has been set up to drive the implementation process by engaging NEPAD and SADC, since the donation by IBM is intended for sub-Saharan Africa.	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
			Acquisition of Phase II equipment by March 2009	Phase II equipment has been purchased. The CHPC building has been refurbished to accommodate the expansion of the CHPC.	
			Five-year Human Capital Strategy Plan finalised by May 2008 and being implemented	The Human Capital Strategy is already being implemented.	
		SA-VLDB Centre feasibility study report: infrastructure, HCD and research. This feasibility study will also serve as a motivation for a second cyber infrastructure functional node: SA-VLDB Management Centre	Feasibility report completed by March 2009	Report on the feasibility study not completed. The second node has been redefined as the SA-VLDB. The very large database will form a strategic component of cyberinfrastructure in South Africa, providing the NSI with competitive infrastructure.	There has been a delay with the formation of a working group to drive the process, and wider consultation and investigation are required.
		Establishment of a national broadband network for research: Phase I: layout of the physical infrastructure for SANReN, local connectivity between the CHPC and TELs initiated	Phase I network functional by March 2009	Well on track, with 60% of priority and identified institutions connected to the 10 Gbps network.	Negotiations with third parties such as local metropolitan municipalities, as well as the absence of existing fibre connections in certain locations, also delayed the process to some extent.



# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
		Establishment of a national broadband network for research: Phase II: layout of the physical infrastructure for SANReN and international connectivity initiated to enhance efficient transmission of research data	Phase II network functional by March 2011		
	SASRIF	Establishment of SASRIF to provide strategic direction in terms of infrastructure development (i.e. policy development, strategic interventions)	Forum operational by June 2008	SASRIF has already met twice. As the custodian of the Ten-year Infrastructure Plan, it has started engaging with the Grand Challenge conveners on its infrastructure needs. The Global Change presentation has already been made to the forum. An initial draft document has been endorsed by the forum as a starting point to build on. Additional members to the forum have been nominated.	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Ten-year Strategic Infrastructure Plan	Development of a Ten-year Strategic Infrastructure Plan to guide the way in which infrastructure needs can be met across the NSI in a strategic manner	Plan finalised by March 2009	Ten-year plan not finalised. The delivery date for the draft plan is November 2009. SASRIF is driving the plan and engaging with Grand Challenge conveners.	The timelines had to be reviewed, given the unreadiness of the infrastructure plans for the Grand Challenges.
	Establishment of a HRTEM centre	Centre for HRTEM feasibility study report, infrastructure, HCD and public awareness	Completion of assessment and finalised feasibility report by May 2008	Feasibility report was finalised by May 2008. NMMU was identified as the appropriate location for the HRTEM.	
	National Equipment Programme roll-out	An 80% increase in the acquisition and placement of research equipment in institutions by 2018. To ensure equity in race, historical background and geographical distribution, the aim is to spend up to 60% of the 2008/09 budget to address these imbalances	60% of budget allocated to address imbalances	R55 million was allocated for the 2008/09 financial year. The NRF was engaged in redress issues and it was agreed to conduct an impact assessment study for NEP and the NNEP in the 2009/10 financial year.	
		Development of a fully operational equipment database to track the status of existing equipment and research output, inform future equipment acquisition, and to impact on policy development	Database in place and functional by March 2009	Database is not in place. The database will ensure that the DST is able to quantify the investments it makes in the acquisition of equipment.	Timelines have been reviewed due to elaborate NRF tender and operational processes.



## SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>National Indigenous Knowledge Systems Office (NIKSO)</b>	To increase IKS awareness in a measurable way	<p>Baseline study of IKS awareness conducted</p> <p>Posters on the IKS work by five science councils distributed throughout NSW</p>	<p>Basis for measuring IKS awareness established</p> <p>200 000 students and 200 IK holders reached</p>	<p>Draft baseline study report was submitted to the DST by North West University.</p> <p>195 000 (5 000 short of the business plan's 200 000 target) people visited the NSW sites countrywide.</p>	<p>The implementation model is heavily dependent on transport (for learners). Reduced participation was due to the negative impact of exorbitant fuel hikes during 2008. However, more reach into rural areas was achieved and over three million people were reached through the media.</p>
	Development of sui generis legislation for IKS protection	Cabinet approval	<p>Approval obtained by 30 September 2008</p> <p>Draft document/ Bill completed by March 2009</p>	<p>Framework was developed and terms of reference were completed. This process will commence once Cabinet approves the amendments to the Bill, which have an impact on the proposed sui generis legislation.</p>	<p>Process in abeyance awaiting a Cabinet decision on the DTI Intellectual Property Amendment Bill.</p>
	Review of the implementation of the IKS policy by Ministerial Advisory Committee	Commissioned study report submitted to the Minister	<p>Cabinet memorandum reporting progress on implementation of IKS policy</p>	<p>Ministerial Advisory Committee is finalising the review report.</p>	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	IKS Multimedia Platform for IKS documentation centre	One IKS documentation centre with recordal and registration system in place	300 IK holders registered	ToR for national recordal system (NRS) model and architecture investigation report developed and completed. Feasibility study on ideal IKS centre in progress. NRS model to be presented to DST EXCO.	Several reasons explain the delay in rolling out: limited capacity at UniZulu and finalisation of the NRS architecture are the main reasons.
	An IKS portal as Phase I of the IKS database	Portal developed	IKS portal completed by March 2009	Basic portal was completed and registered with domain name.	
	Leveraging funding for MRC IKS laboratory equipment	Fundraising strategies devised and implemented	R5.7 million	R5.5 million has been transferred to the MRC and equipment is now being commissioned.	
<b>Development of IKS infrastructure</b>	Strategically raise the IKS profile in the South Africa knowledge agenda through mainstreaming in the NSI	Research Chair in Knowledge Systems Studies	Appointment of chair by March 2009	Chair has been identified. Appointment to be announced by the NRF.	
		Registration of Bachelor of Indigenous Knowledge System (BIKS) with the South African Qualifications Authority (SAQA) through incipient CoE on curriculum studies	Register BIKS by October 2008	BIKS qualification has been registered with SAQA.	





# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Integration of the IKS Bioprospecting Platform in the Farmer to Pharma Grand Challenge	IKS Bioprospecting platform fitted into the F2P value chain	One CoC on African Traditional Medicine (ATM)	(1) IKS Bioprospecting and Product Development Platform is now part of F2P. CoC was put on hold by the EXCO.	
		Establishment of CoC in Traditional Medicines led by the CSIR	Complete investigation on five ATM lead cures from medicinal plants	(2) Research on: <ul style="list-style-type: none"> <li>(a) HIV</li> <li>(b) TB</li> <li>(c) Diabetes</li> <li>(d) Malaria</li> <li>(e) Skin conditions ongoing:               <ul style="list-style-type: none"> <li>- Medical Research Council</li> <li>- University of KwaZulu-Natal</li> <li>- CSIR</li> <li>- University of North West</li> <li>- University of Pretoria</li> </ul> </li> </ul> (3) Pilot completed and migrated to DTI Craft Hub Programme due to financial constraints at NIKSO.	
	IKS Innovation Strategy on Jewellery and Indigenous Architectural Technologies	Two platforms established by government departments and science councils	Completed strategies by December 2008	Not implemented.	Not implemented due to limited budget.



## PROGRAMME 5: SOCIO-ECONOMIC PARTNERSHIPS

### 5.1 Purpose

The Programme aims to provide policy, strategy and support for R&D-led growth. Its strategic focus is informed by government's Micro-economic Reform Strategy, the National Industrial Policy Framework and the Ten-Year Innovation Plan. In terms of the DST's broader strategic objective of advancing innovation towards a knowledge economy, the Programme's interventions are aimed at promoting the growth of both public and private investments in research and development, advancing growth in economic activities through sustainable, value-added exploitation of the natural capital of the country, supporting greater use of ICT applications, and at enhancing the research effort into and responses to social development challenges.

### 5.2 Measurable objective

Form partnerships and build programmes to ensure the appropriate contribution of science and technology in different sectors.

The following achievements are noteworthy:

#### (a) *Science and Technology for Economic Impact*

- Continuation of the successful Tshumisano internship programme with more than a 100 new interns supported during the 2008/09 financial year.
- The ICT R&D strategy Geomatics Platform developed by the CSIR, namely the Advanced Fire Information Service, which is already making a positive impact as an early warning system in the country's fire-prone areas.
- Initiation of a large-scale demonstration of a wireless mesh network as part of an Apex of Priority project investigating the broadband connectivity of

Dinaledi schools and other government facilities in underserved areas.

- Support of the successful hosting of the Advanced Metals Initiative Conference between 18 and 20 November 2008, which included a strong student presence. Support of an Advanced Manufacturing Technology Strategy Symposium held in April 2008.

#### (b) *Science and Technology Investments*

- Working with National Treasury, the DST has developed an automated system for collecting data on public expenditure on STAs. A report presenting actual scientific and technological activity (STA) expenditure for 2007/08 has been compiled for submission to Cabinet.
- The DST supports other government departments in implementing their S&T-related projects and coordinates joint projects with them. The DST has concluded memoranda of understanding and identified joint work with the departments of Environmental Affairs and Tourism, Health, Transport, Social Development and Agriculture, and with Statistics South Africa. It also supported the finalisation of the National Agricultural Research Development Strategy in the Department of Agriculture. The DST has also initiated a study with the Department of Health to review the research and technology capacity of the National Health Laboratory Services as part of its responsibility for facilitating policy and planning with respect to national capabilities for research and development related to essential services and disaster management.
- A process is underway to implement the integrated national Research Information Management System at higher education institutions, science councils





and other research institutions. So far, about seven HEIs and two science councils have subscribed to implementing the system.

- The 2006/07 R&D Survey report indicated an increase in national expenditure on research and development from R14,1 billion in 2005/06 to R16,5 billion in 2006/07. This indicated an increase in R&D as a percentage of GDP from 0,92% to 0,95% for the respective years. The DST is working with the Human Sciences Research Council (HSRC) in conducting the 2007/08 R&D Survey and the 2008 Innovation Survey.
- The DST supported the government of Malawi in developing indicator systems, and participated in a NEPAD indicators workshop to promote and learn about science and technology indicators in other African countries.
- Administrative systems for implementing the R&D Tax Incentive Programme have been developed, and a report to Parliament on the progress and uptake by the private sector was presented to the Cabinet cluster.

### **(c) Science and Technology for Social Impact**

- The Subprogramme: Science and Technology for Social Impact has continued to implement DST-approved projects successfully in sustainable livelihoods, sustainable human settlements, enhanced service delivery and science, and research and policy.
- Phase I(a) of a geomatics platform to enhance spatial planning across all spheres of government was completed. This entailed the development of an electronic platform to support integrated planning and development modelling.
- The Eastern Cape Sea Cage Finfish Farming Project was initiated with Stellenbosch University's Division

of Aquaculture and I&J. The aim of the project is to determine the technical, environmental and financial feasibility of farming three indigenous marine finfish species in sea cages, namely dusky kob, silver kob and yellowtail.

### **5.3 Progress against service delivery objectives and indicators**

#### **(a) Develop new industries in information and communication technology (ICT) products and services, metals beneficiation, chemicals production and smart materials by initiating one R&D-led intervention for each by 2009**

- **ICT products and services:** Planning work has begun on the development of an Information Security CoC (activity carried over to the 2009/10 financial year). The Information Security CoC draws on South African expertise in cryptography, network security, Internet security, smart card technology, biometrics and wireless communication security, among others.
- **Metals beneficiation:** Major advances were made in the development of an R&D-led Titanium Metals Industry Development programme, which included the planning for the Titanium CoC.
- **Chemicals production:** A five-year project in research and development on downstream fluorochemicals has been initiated, with the DST making a funding commitment of R10 million a year over the next three years. The research and technology participants in the DST-led AMTS include the University of KwaZulu-Natal, Tshwane University of Technology, Durban University of Technology, the University of the Witwatersrand, the CSIR, Stellenbosch University, Vaal University of Technology, Cape Peninsula University of Technology, Central University of Technology, Nelson Mandela Metropolitan University, North



West University, Aerosud, the University of Cape Town, the University of Johannesburg, the University of Limpopo, MegChem, Incomar, AMT, Epsilon, Jonker Sailplanes, Savek, SFS, Fibre Converters, Plastamid, Sunspace, MBV Consulting, Aerosud Interiors, Denel (Detek), SST, and the University of Pretoria.

- **Smart materials:** The composites focus area of the AMTS has been successfully migrated to a biodegradable natural fibre-reinforced composites competency, through the successful first-stage prototypes for Airbus under the NATFIBIO project. This has been extended to the development of biodegradable cartons for the fresh fruit export sector, under an initiative called GREENPAC. A range of R&D institutions and industry players are networked into these projects, laying the foundation for the commercial exploitation of these high-value/high-volume manufacturing opportunities.
- **The sensor focus area** has also matured, through robust industry research networks, into an area of high impact for South Africa. This includes the migration to MEMS technology – a plan has been designed to develop a dedicated MEMS R&D facility in South Africa. This activity has also created the opportunity to focus the micro-manufacturing activity on the manufacturing of MEMS devices. Opportunities identified include micro-pressure sensors, micro-radio frequency sensors, micro-bio-MEMS units (e.g. disease diagnostic kits) and even energy-harvesting devices.

**(b) Support the development of policy and strategy by doing evidence-based research on three priority topics related to poverty alleviation and sustainable livelihoods by 2009**

- A seminar was held in partnership with the HSRC in June 2008 to discuss and disseminate research findings on poverty indicators and social innovation. The project contributed to the development of an Anti-poverty Strategy driven by the Presidency's Social Policy Analysis Unit.
  - A seminar based on research findings by the HSRC, supported by the DST, on the question of the concept of the 'development state' was held in July 2008.
  - A workshop was held with key infrastructure-related government departments, infrastructure planning authorities at the municipal level, university experts and researchers on the findings of the experimental modelling and household-level surveying research carried out as part of the Integrated Planning and Development Modelling Initiative.
- (c) Provide scientific, strategic and policy decision support to government, industry and the broader society on the impacts of global change, specifically on how to deal with the challenges of climate change, by implementing focused interventions by 2009, including the following:**
- A better understanding of the effects of climate variability over shorter periods (seasonal and over the next decade) needs to be developed.
  - The science policy interface needs to be strengthened by developing the institutional mechanisms to support scientific research.
  - Progress was made on a number of focused interventions that will support the long-term goal of providing scientific, strategic and policy decision support on the impacts of global change. This included major progress in drafting the Global Change Science Plan, the concept design



of the Risk and Vulnerability Atlas, consolidation of ACCESS, and the development of the first draft of the Science Policy Interface Strategy.

- With regard to the institutional mechanisms, consultations have commenced on a proposal for establishing a Scientific Bureau on Global Change. This work will be continued in the 2009/10 financial year.

**(d) Improve government decision-making on science and technology as productive investments (including R&D) by producing two evaluation reports by 2009**

- The 2006/07 R&D Survey report indicated an increase in national expenditure on research and development from R14,1 billion in 2005/06 to R16,5 billion in 2006/07. This indicated an increase in research and development as a percentage of GDP from 0,92% to 0,95% for the respective years. The report also provides trends on R&D expenditure by sectors such as government, the science councils, the private sector, higher education institutions and non-governmental organisations, and indicates the level of R&D investment in national priority areas such as biotechnology, nanotechnology and HIV/ Aids and malaria.
- A report on publicly funded scientific and technological activities has been compiled for submission to Cabinet.



## 5.5 Service delivery achievements

The delivery achievements of the programme are tabulated below.

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Science and Technology for Economic Impact</b>	Provide support for the transition of manufacturing competencies higher up the supply chain of state-owned enterprises (SOEs) and global original equipment manufacturers – partnership in the Competitive Supplier Development Programme	DST/government-agreed plan of action for redirecting and upscaling DST infrastructure in AMTS, the Advanced Metals Initiative (AMI), tooling and technology planning  Diffusion to CoCs to support the development of local equipment manufacturers to exploit 20% of the SOEs' capital procurement (Eskom and Transnet)	Technical support needs identified by May 2008 and resources made available for development of local equipment manufacturing suppliers	A plan was designed and approved by the DST and at government level of the Industry Focus Group of the Economic Cluster. The CSDP is a rapidly evolving process that requires extensive learning by doing. As a long-term initiative, it was identified that the DST needed to be guided by a clear EXCO-approved framework for its engagement on the CSDP. Such a framework will also assist in identifying and managing risks associated with DST participation in such a major national initiative. As such, the focus was on the finalisation of the Technology Localisation Framework, which was done in December 2008.	
			Companies identified by July and development programme started by the end of August 2008	In parallel with the development of a clear framework, the DST continued with the process of engaging potential companies and sourcing resources to assist in the proposed engagement with these companies.	





# SUMMARY OF THE PROGRAMMES



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
				<p>This included the submission of an application to the Employment Creation Fund of the Economic Cluster for R92 million to support the implementation of the Technology Localisation Framework. At the close of the financial year, the proposal was in the last stages of formal approval. A cooperation agreement was signed with and funded by UNIDO as the technology benchmarking partner.</p> <p>Eskom and Transnet, through the DST's cooperative working arrangement with the Department of Public Enterprises, have provided details of supplier shortlists and indications of original equipment manufacture (OEM) bidders.</p> <p>Following the completion of the Technology Localisation Framework, new and more appropriate indicators were developed. These revisions are reflected in the 2009/10 business plan.</p>	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
	Support provided for the development of local manufacturing firms to exploit the share of engineering work packages from the Nuclear Build Programme, radio-astronomy infrastructure investment and opportunities in the pharmaceutical industry	The DST/ government-agreed plan of action drawing on the AMTS, the AMI, tooling and the CoCs to make it possible for local engineering companies to exploit opportunities from the expansion plans in public infrastructure	Plans finalised and integrated into an Industrial Policy Action Plan (IPAP) for implementation by July 2008  Clusters of companies identified by October 2008 and development programme started by January 2009	The Technology Localisation Framework was tabled and endorsed by the Industrial Strategy Focus Group. Inputs were finalised for integration into the proposed three-year IPAP and submitted to the officials in the Department of Trade and Industry responsible for the IPAP element of the development of a nuclear manufacturing industry.  A plan of response to the radio astronomy local content manufacturing opportunities has been developed and is still to be accepted and finalised by the DST.	
		Special project: partnership with the Department for Provincial and Local Government (DPLG), COFISA and provinces on regional innovation, planning and assessment	Project consultations and agreement by June 2008 and implementation towards the end of 2009	The COFISA mandate is for promoting regional innovation in a limited number of provinces, namely the Eastern Cape, Gauteng and the Western Cape. The DST assisted with support for regional innovation planning and assessment in Limpopo and Mpumalanga during the period under review.	
	Directed SET programmes for advancing the implementation of the NRDS technology missions	Resource-based industries: development of a local titanium industry	Finalised by May 2008	The initial industrial development plan was finalised in the second half of 2008 and included tabling in the Industrial Strategy Focus Group.	



# SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
		National investment plan and CoC model adopted	October 2008	The development plan has undergone two additional revisions over the past year. The CoC model has been developed, but additional work is required on some of the detailed modalities of its operation.	
		Incubation plan for industry value chain elements finalised and operationalised	Competency for metal production demonstrated by 2011, industry development ongoing over a 10-year period	<p>The first steps were taken in 2008 by this infant industry, which the DST, the Department of Trade and Industry and the Department of Minerals and Energy are attempting to establish. A few milligrams of titanium powder were successfully produced. The next challenge is to produce it beyond laboratory scale, perhaps about 100 g, while achieving the aerospace-grade performance specifications and then on to producing a good few tons to demonstrate industrial-scale production capability.</p> <p>Another important success for research and development in 2008 is that an aircraft sub-component was successfully produced to the technical specifications of one of the world's leading aircraft manufacturers by the DST-funded research team using investment casting technology.</p>	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
		Research results, reports and advocacy activities in the technology mission areas of the AMTS, ICT, chemicals and related industries, and research biochemicals international (RBIs)	End of 2009 for 70% of research and technology development targets in each of the three-year agreements with the research intermediaries for implementing national strategies on AMT, ICT, chemicals and RBIs  100% of deliverables in both the annual programmes of work on policy studies and advocacy activities	Programme 5 target refers to successful completion of approved research activities contained in existing agreements with implementing agencies in the AMI, the AMTS and the ICT R&D Strategy. The work of the Programme is focused on monitoring and evaluating the implementation of the research agreement.  On this basis, an external review was carried out on the three AMI contracts, and the 70% target was achieved. In the case of the AMTS and the ICT, a similar goal was achieved.	
		Special project: all the necessary actions required to establish and operationalise a CoC in the area of information security	Finalise by May 2008  Directed R&D activities and product development to be led by CSIR Meraka Institute as per the three-year agreement	Initial conceptualisation of the Information Security CoC was finalised by November 2008 and submitted to the EXCO.	More detailed and specific plans are required before the initiative can be considered as a CoC. This is planned to continue until July 2009.
		All the necessary actions required to finalise and operationalise a national programme of work as defined by the Global Change Grand Challenge in the Ten-Year Innovation Plan	Finalised by May 2008 (Comment: the target was for the planning process and this was finalised)	A defined and approved workplan for the planning of the Global Change Grand Challenge was adopted. The actual planning work is well advanced and will continue until June 2009.	



## SUMMARY OF THE PROGRAMMES

Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
<b>Science and Technology for Social Impact</b>	Directed, large-scale scientific research programmes set up to address the challenges of human and social dynamics in development	The implementation framework for this component of the Ten-Year Innovation Plan	Finalised and implemented by June 2008	Serious delays were experienced in finalising the concept document on Human and Social Dynamics Grand Challenge of the Ten-Year Innovation Plan. Concept document finalised only in April 2009.	
		National R&D programme of work in the social sciences and humanities	National research priorities in the humanities and social sciences finalised by August 2008	The next step involves the development of a strategy document that will be supported with a more concise implementation plan.	
		Special policy research projects, research advocacy through networks, and dissemination of information aimed at enhancing an understanding of development, poverty and unemployment	100% of deliverables in both the annual programmes of work on policy studies and advocacy activities	Policy Indicators and Social Innovation for Poverty Reduction – a workshop and seminar were held in May and June 2008 to disseminate research results.	
				The DST, the International Social Science Council, the HSRC, the NRF, AISA and the International Council of Philosophy and Humanistic Studies jointly sponsored a Scientific Symposium on Knowledge and Transformation in the Social Sciences and Humanities in Africa.	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
				<p>Community assessment centres: A project was conceptualised and approved for piloting with selected rural-based universities.</p> <p>Prioritisation of six social sciences research chairs was finalised with the NRF. Processes were completed for awarding of chairs to qualifying universities. Start-up expected during the 2009/10 financial year.</p>	
	Directed technology programmes contributing to learning and decision-making for sustainable livelihoods and sustainable human settlements	Technology demonstrations, case study reports and advocacy activities implemented in partnership with the TIA	<p>70% of research and technology development targets reached within the three-year agreement period with TIA</p> <p>100% of deliverables by the DST in both the annual programmes of work on case studies and advocacy activities</p>	<p>Progress was achieved in developing a joint Department of Water Affairs and Forestry (DWAF)/DST programme on Technology Solutions for Accelerating Delivery of Water Services to those communities who still do not have access to safe, healthy and reliable drinking water. Start-up commenced in the last half of 2008 and full project work will commence during the 2009/10 financial year.</p> <p>The Ikhwezi Municipality Communal Water House project, co-funded with the municipality, the DWAF and the key funder, the German Federal Ministry of Education and Research, has been completed with technologies installed and a launch date planned for the near future.</p>	





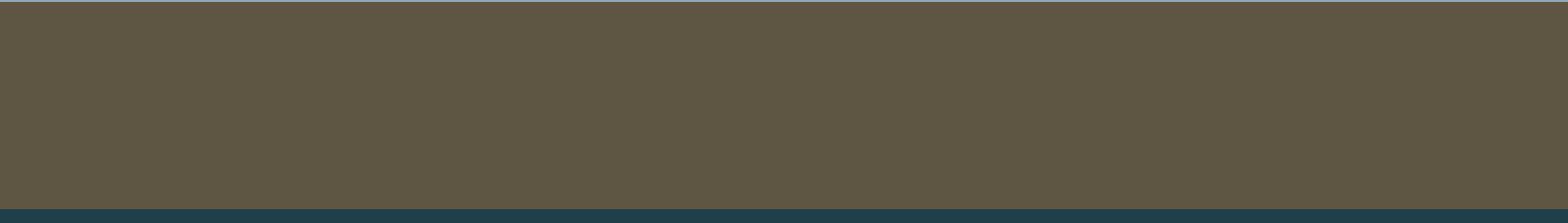
# SUMMARY OF THE PROGRAMMES

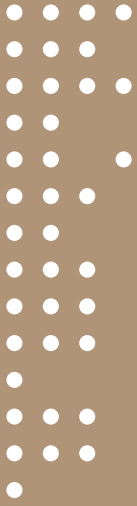
Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
				<p>Progress was slow with regard to a sustainable human settlements project in Buffalo City, Eastern Cape, and Overstrand/Kleinmond, Northern Cape due to problems experienced in securing provincial and municipal approval, as well as delays in dealing with environmental impact reports</p> <p>Demonstration projects are still ongoing on the application of science and technology for the exploitation of natural resources for wealth creation through enterprise creation in essential oils, medicinal plants and aquaculture.</p>	
<b>S&amp;T Investments</b>	A portfolio of directed monitoring, assessment and reporting activities on science, technology and innovation investments and performance	National R&D Survey	R&D Survey report produced annually	The report was produced and the findings were disseminated at the 2009 International Science Innovation and Technology (INSITE) Exhibition. High-level findings were communicated to Cabinet.	
		Government S&T Expenditure Plan	Report on government S&T expenditure by August 2008	The 2007/08 report on publicly funded STAs was developed but not presented to Cabinet.	The presentation was postponed until after the general elections.
		National Innovation Survey	Innovation Survey reports prepared in 2008 and 2010	Fieldwork is underway and very near completion.	



Subprogramme	Output	Measure/indicator	Actual performance against target		Reasons for variance
			Target	Actual	
		Technology Balance of Payment (TBP) assessment facility	TBP derived from available statistics (2008) and calculated from approved model by 2009	The terms of reference were finalised and the programme of work was initiated in the last quarter of the year.	Delays were experienced with consultations on definitions and activity planning.
		Indicators for transition to a knowledge economy	National approach and methodology adopted in 2008  Baseline determined and assessment done in 2009/10 financial year	The terms of reference were finalised and the programme of work was initiated in the last quarter of the year.	Delays were experienced with consultations on definitions and activity planning.
	Evaluation of the R&D Tax Incentive Programme	Report and advocacy activities to promote increased R&D investments by the private sector	Report to be submitted to Cabinet every year  100% of deliverables committed to are reflected in the annual business plan on advocacy activities, particularly for small manufacturing companies	A 2007/08 report was prepared for presentation to Parliament.	Presentation of the report was postponed until after the general elections.

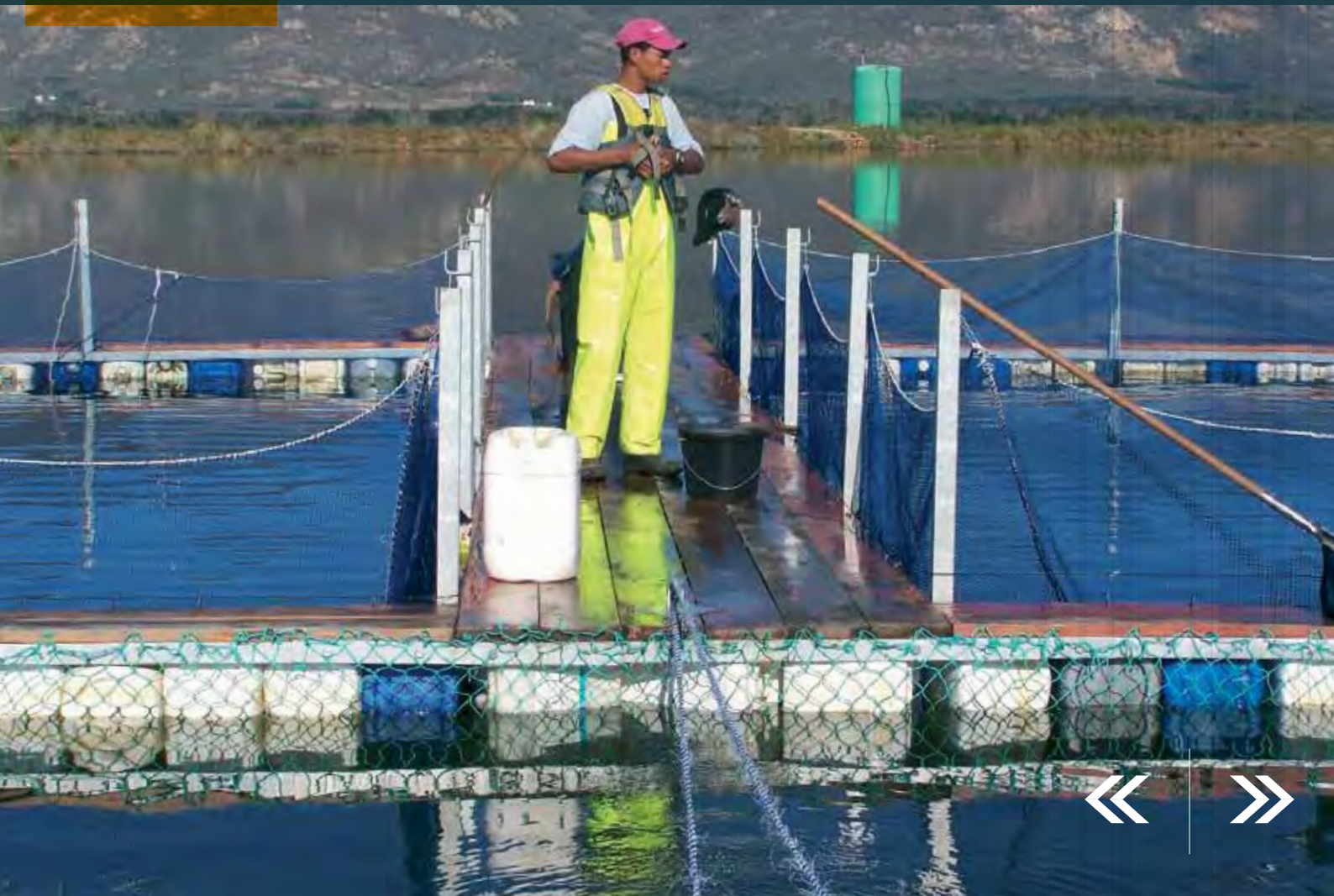






# PUBLIC ENTITIES

SCIENCE AND TECHNOLOGY EXPERT SERVICES



## COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH



### Mandate

The mandate of the Council for Scientific and Industrial Research (CSIR), established under the Scientific Research Council Act, 1988, is to foster, through directed and particularly multidisciplinary research and technological innovation in the national interest and in fields which, in its opinion, should receive preference, industrial and

scientific development, either by itself or in cooperation with principals from the private or public sector and thereby to contribute to the improvement of the quality of life of the people of South Africa. This allows the organisation to operate in a number of sectors, and it is therefore very well positioned to respond to a number of government priorities.

## SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

### Farmer to Pharma

#### *Greater African collaboration where traditional medicine meets science*

The CSIR has to date captured 250 local claims for cures based on medicinal plants; at least 72 claims were identified for therapeutic concepts for asthma, arthritis, malaria, analgesics and HIV. Fifteen of these claims demonstrated positive results and are being developed further. Two herbal remedies based on the traditional use of plants for the treatment of HIV-infected patients have shown significant antiviral activity with limited toxicity in an HIV cytoprotection assay. In their quest to transform African traditional medicines into scientifically-validated products and to discover new active pharmaceutical ingredients, CSIR researchers this year expanded their collaboration to Tanzania and Malawi. Two PhD students from these countries have joined the research team. Their studies focus on HIV treatment, using traditional knowledge from their respective countries. The CSIR's affiliation to the Southern African Network for Biosciences (SANBio) and the Southern African Biochemistry and Informatics Network (SABINA) has been instrumental in establishing

the collaborative networks. SANBio is a NEPAD science and technology initiative, while SABINA is a body of six southern African research institutions seeking to exploit biodiversity in the region and increase capacity in natural products research to impact on food security, public health and value-added exports.

#### *New venture to produce rabies virus-neutralising antibody from plants*

A proposed new start-up venture, GreenPharm™, that intends producing cost-effective anti-rabies prophylaxis from plants – specifically tobacco leaves – was the inaugural winner of the South African Bio Business Plan Competition in 2008. GreenPharm™ stems from research on a rabies virus-neutralising antibody, produced in plants. The business plan proposed a technology platform that will use plants to generate proteins used in preventative post-exposure rabies treatment and other complex therapeutic proteins against other diseases such as HIV and cancer. The South African Bio Business Plan Competition is an initiative of the Innovation Fund in partnership with Emory University, USA, who jointly organised an executive training programme



where participants received world-class training in the development of a biotechnology business. The prize money of R100 000 and an investment of up to R15 million will be channelled towards the production of clinical batches of an anti-rabies antibody, an alternative to the existing one made in human or equine blood plasma.

#### ***Pilot cultivation of essential oil and medicinal plants***

The CSIR pilots cultivation projects in different areas of the country to determine the effect of climatic conditions, as well as agronomic and processing conditions on the levels of secondary metabolites produced by plants under cultivation. The information gained through such pilot studies informs decisions on crop selection when planning enterprise-creation projects in specific areas in the country, where communities have access to land and water for irrigation. Pilot studies to support and stimulate innovation in the essential oil and medicinal plant sector are also undertaken. In expanding this sector, the development of approximately 20 essential oil and medicinal plant projects were undertaken in underdeveloped areas across the country. These projects involved the transfer of CSIR and externally-sourced technology. Collaborators include researchers at universities and research councils, which aim to transform a new product concept into herbal medicine. During the 2008/09 financial year, the CSIR piloted the cultivation of *Sutherlandia*, *German chamomile*, *Elephantorrhiza elephantina* (BP5) and Devil's claw. All pilots showed promising results and will either be continued or moved into full-scale cultivation in the coming financial years.

#### **Space science and technology**

##### ***Availability of quality remote sensing products ensured***

As part of the implementation of the DST's South African Earth Observation Strategy (SAEOS) by the CSIR, its Earth Observation Data Centre (EODC) has been reengineered using the Data Information and Management System (DIMS). The ultimate goal of

SAEOS is to contribute to the nine societal benefit areas identified by the Group on Earth Observation (health, disasters, energy, climate, water, weather, ecosystems, agriculture and biodiversity), thereby benefiting all South Africans in the long term. Given its wealth of archived data, the CSIR has unique operational experience in managing the remote-sensing supply chain to a geoprocessed product. Through DIMS, it has been possible to ensure that the earth observation portal is fed with the remote-sensing archive, as well as new products and imagery. Its advanced, automated supply chain controls and manages the workflow of image processing. This is complemented by an advanced customer interface to order and search the required products from the EODC. DIMS ensures operational control, quality and throughput within the CSIR's remote sensing supply chain. The EODC can therefore contribute to various national, regional and international programmes, and will play a vital role in the South African National Space Agency.

##### ***2008 SPOT 5 national mosaic provides fundamental geospatial source layer***

The release of the 2008 SPOT 5 national mosaic has ensured that government and academic end users have access to a fundamental geospatial source layer. The 2008 release is the culmination of the two previous releases (2006 and 2007). The mosaics are the outcome of a three-year contract with Spot Image, France, to provide SPOT telemetry for direct acquisition under a unique multi-user government licence. This imagery was sourced with funding from a consortium of stakeholders, including the departments of Water Affairs and Forestry, Agriculture, Science and Technology, and Environmental Affairs and Tourism, as well as Statistics SA, the Development Bank of South Africa, Eskom, the National Disaster Management Centre, the Municipal Demarcation Board, and the Independent Electoral Commission. To date, over 200 government and 150 postgraduate users have accessed this resource, which is free under the multi-user licence. The imagery has been applied with success in diverse national programmes to promote sustainable





development in the sectors directed at socio-economic development, and the environmental, water, agriculture and security sectors. It has also supported postgraduate students in the fields of remote sensing and geomatics.

### ***New X-band antenna at Hartebeesthoek bolsters remote sensing capacity***

An investment of R22 million in a state-of-the-art X-band antenna has bolstered the capacity of the CSIR Satellite Applications Centre to track more earth observation satellites and increase its archive of earth observation data. This expansion to the existing infrastructure at Hartebeesthoek represents the DST's proactive commitment to supporting the establishment of space-related infrastructure. The CSIR is now in a position to acquire additional valuable data to support national, regional and global priorities. This investment will also support the priorities related to the formation of the South African National Space Agency. Immediate benefits accruing from the new antenna are for the CSIR's data democracy project. This project focuses on unhindered access to earth observation information; open source software and open systems; adequate dissemination models that reflect the realities of bandwidth in developing countries; and locally initiated cross-border collaborative projects and intensive capacity building and training programmes. Further beneficiaries include government-funded initiatives, such as the DST-funded SAEOS, and the delivery of SPOT 5 data to all government stakeholders on a yearly basis. While the X-band antenna was imported from France, the civil engineering and construction was done locally and the antenna was installed by the French team working with CSIR engineers. It is fully automated and capable of carrying most of the earth observation workload, when needed.

### **Energy security**

#### ***Indigenous algal strains surveyed for biodiesel potential***

The CSIR has been investigating indigenous, lipid-producing algae that could be transformed into

biodiesel. Approximately 20% of South African aquatic environments have been sampled, resulting in some 150 algal isolates, of which 52 produce lipids. Researchers found six strains that could be of value as a biodiesel feedstock. One of these isolates has demonstrated the production of a highly valuable omega 3 fatty acid, eicosapentanoic acid. Proof of concept studies are under way to demonstrate the market potential of this strain. The environmental effects of burning fossil fuels and the increased crude oil prices have triggered an increased interest in biofuels. Biodiesel is traditionally produced from oil seed crops, which have lower yields per land area and threaten food security when compared to algae. PlantBio has funded a joint project between the CSIR, Durban University of Technology and Mangosuthu University of Technology. This project will result in a national database of all isolated algal strains, including non-lipid producing strains that could be explored later for other valuable products. The current research has attracted significant interest from government and commercial partners. The CSIR is also investigating the use of industrial waste water and carbon dioxide flue gas to grow algae, thus reducing the negative environmental impact of current industrial practice.

#### ***Advanced optical materials for clean energy***

Selective solar absorbers – materials that harness the energy of the sun – have the potential to offer low-cost solutions to clean energy in rural communities. CSIR researchers in advanced photonic materials have succeeded in tailoring the optical and structural properties of materials to achieve a novel selective solar absorber, which comprises a composite structure embedded with carbon nanoparticles. Laboratory tests show that it is approximately 30% more efficient than the best alternative on the market. The sol-gel recipe that is used to manufacture the composite material has the additional advantages of being environmentally friendly and having a low production cost. Researchers are now working on a roll-out strategy to make this technology available to South African communities, with particular emphasis on low-cost and efficient energy for rural communities.

### ***Hydrogen infrastructure to enjoy focused research attention***

In response to the DST's National Hydrogen and Fuel Cell Technologies Research, Development and Innovation Strategy, three centres of competence (CoCs) are being developed. The CSIR and North-West University were appointed as joint hosts of the Infrastructure CoC, with the primary goal of developing marketable technologies for the production and storage of hydrogen with a low carbon footprint. The other CoCs will focus on systems integration and catalysis. Concerns over climate change and energy security have led many countries to consider working towards a hydrogen economy, in which a large portion of the energy currently supplied from fossil fuels would be replaced by hydrogen. South Africa possesses approximately 75% of the world's reserves of platinum, a key material at the heart of converting hydrogen directly to electrical energy. A business plan, in the final stages of review, has been designed and tangible infrastructure put in place.

### **Climate change**

#### ***Laser technology for a better understanding of the atmosphere***

Laser radar, more popularly known as lidar (light detection and ranging), is becoming one of the most powerful techniques for active remote sensing of the earth's atmosphere. Using advanced techniques and instrumentation, a mobile lidar system has been designed and developed at the CSIR. Although lidar has been exploited for atmospheric measurements in many countries, there are only two lidars in Africa, one of which is the mobile lidar system at the CSIR. This system is an excellent tool for monitoring the atmosphere, such as the monitoring of various pollutants in the lower atmosphere that contribute to global climate change and global warming, and is able to do so in a relatively short period (a few seconds to minutes).

### ***CSIR asks for urgent alternatives to sand-mining***

Sand-mining in the estuaries and riverine sections of Durban's rivers will have a dramatic effect on coastal erosion if alternative sources are not found soon. Combined with climate change, the consequences to KwaZulu-Natal beaches could eventually exceed the erosion suffered in 2007. A CSIR-study found that the impact of dams and mining could result in mean coastal erosion of more than one metre per year. Combined with global climate change – increased sea levels and sea storminess – the consequences in terms of coastal erosion could be severe. Furthermore, it has been demonstrated that those rivers most affected by sand-mining will take a very long time to recover, even if sand-mining is banned. Increased demand from the construction industry is resulting in a mining rate that already exceeds the natural rate of replenishment. This could have disastrous impacts on other industries relying on the sand resource, such as tourism and fisheries. The study recommended that sand supplies should be obtained from alternative sources, such as non-riparian mining and dredging of marine deposits, and that further research is needed in terms of the trade-off between tourism and sand-mining.

### ***A flame-retardant, 'green' natural fibre solution for aircraft found***

The use of synthetic fibre-reinforced petroleum-based plastics for aerospace and automotive applications is creating problems with depleting oil reserves and growing ecological damage. One of the challenges in the aviation sector is to address flame, smoke and toxicity (FST) requirements when using natural fibres for reinforcing composites. It is critical that panels for aviation applications should comply with FST standards as per the Federal Aviation Authority's airworthiness criteria. The Natural Fibre Reinforced Biocomposites consortium project focuses on the development of natural fibre-thermoset composites for use as secondary structures in aircraft. Through this consortium, CSIR



researchers have developed a natural fibre reinforced sandwich panel for the interior of Airbus aircraft. For the first time, natural fibre-based panels for aerospace applications were developed using an environmentally benign flame-retardant treatment on the natural fibres to achieve FST requirements. The major advantages of these panels include being lightweight (leading to energy savings), environmentally friendly, fully degradable and sustainable. They are, therefore, truly 'green'. Other advantages are that it contributes to the 'greening' of aircraft components and the implementation of REACH (registration, evaluation, authorisation and restriction of chemicals), and is in line with the European Union's Clean Sky Initiative.

## **Human and social dynamics**

### ***Helping South Africans contribute to a safe society***

During the past year, the CSIR used the Action for a Safe South Africa (AFSSA) 'breaking the cycle of violence' model as the basis for facilitating local safety plans in 24 precincts in the Western Cape, commissioned by the South African Police Service. The model advocates interventions in the social arena rather than the criminal justice domain – focusing on the need for a broad strategy for safety, rather than a security-based strategy. In addition to the South African Police Service and the Department of Justice and Constitutional Development, stakeholders could therefore include the departments of Social Development, Sport and Recreation, Arts and Culture, Health, and Education. Each stakeholder is responsible for interventions at different points in the cycle, according to its mandate. The CSIR worked with local and international experts to find evidence in the literature and practical examples of interventions that are implementable at local level with a positive impact on local safety. The AFSSA convention in August last year brought together more than 300 key players in community safety and was followed early this year with the publication of

a book on the outcomes of the convention. The book aims to enable South Africans (from academics and service providers to small organisations and individuals) to contribute to a safe society.

### ***Enhanced ICT portal for disabled persons***

The release of the latest version of the National Accessibility Portal (NAP) presented a significant step forward in the drive to integrate people with disabilities into the mainstream economy and society through the use of ICT. The NAP research and development initiative addresses the ICT needs of persons across the entire spectrum of disability and their marginalisation from the mainstream economy and society. This initiative was conceptualised and developed by the CSIR's Meraka Institute, in partnership with a representative group of disabled people's organisations and national government through the Office on the Status of Disabled Persons in the Presidency. This latest NAP version contains a number of new features and additional functionality, most notably the inclusion of South African Sign Language on the interface, which aids the navigation process for the deaf. It also provides information through other modalities, specifically an SMS-based query facility using mobile phones, as well as an interactive voice response system using the telephone. Significant research went into the optimisation of the downloading process and the information being conveyed in the sign language videos. It also includes expanded links to employment agencies dealing specifically with job opportunities for people with disabilities. In addition, improved communication is facilitated through the addition of messaging between users. Community inclusion and interactivity have been enhanced through added functionality such as 'Share on Facebook', 'Add NAP feed to your Facebook profile', 'Email to a friend', 'NAP messaging to a friend' and 'Discuss this content'.

## NATIONAL RESEARCH FOUNDATION



### Mandate

The mandate of the National Research Foundation (NRF), established under the National Research Foundation Act, 1998, is to promote and support research through funding, human resource development and the provision of the necessary facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge, thereby contributing to the improvement of the quality of life of the people of South Africa.

### Strategic goals

The NRF focuses on:

- promoting internationally competitive research as basis for a knowledge economy;
- growing a representative science and technology workforce in South Africa;
- providing cutting-edge research, technology and innovation platforms;
- operating world-class evaluation and grant-making systems; and
- contributing to a vibrant national innovation system.

## SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

### Research outputs and initiatives

- The staff of the national research facilities published 180 refereed articles.
- Researchers sponsored by the Research and Innovation Support and Advancement unit (RISA) discretionary funding (excluding contracts) published 5 354 peer-reviewed articles.
- Fourteen patents were granted to research sponsored by RISA.
- A total of 254 international research projects were funded under agency-to-agency and country-to-country agreements.

The NRF supported the 4<sup>th</sup> International Geosphere-Biosphere Programme Congress on Sustainable Livelihoods in a Changing Earth System in Cape Town from 7 to 9 May 2008. The congress aimed to support the UN Millennium Development Goals of

ensuring environmental sustainability and developing a global partnership for development. The South African National Antarctic Programme Bibliographic Database was launched in 2008. It is intended to be a resource and platform for researchers embarking on sub-Antarctic and Antarctic research, and comprises a central repository of 2 492 records, including books, scientific and popular publications, and theses. The NRF supported the development of the South African Tree of Life project, the main products of which will be a comprehensive online and interactive catalogue of South Africa's biodiversity.

### Human capacity development: Science awareness

- A total of 36 738 learners were reached through interaction between the national research facilities and schools.





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- Facility awareness programmes reached 4 102 educators.
- The research infrastructure at the national research facilities were visited by 627 035 members of the public as part of science awareness activities.
- The activities of the South African Agency for Science and Technology Advancement (SAASTA) reached 328 546 learners.
- SAASTA activities reached 10 536 educators.
- Some 260 389 participants were involved in science festivals under the SAASTA umbrella.
- SAASTA organised and hosted the 2<sup>nd</sup> African Science Communication Conference (ASCC), which was attended by 118 delegates from 16 countries, contributing to the rapidly developing field of science communication and public engagement with science on the African continent.
- The South African PhD Project hosted the first South African PhD conference and fair in May 2008. A total of 295 current and potential PhD students attended, of which half were women and 80% were black.
- A total of 2 031 doctoral students (52% black) were supported through RISA programmes.
- The Thuthuka and Research Niche Area Programmes, which are geared towards researcher development in previously disadvantaged groups, have supported the training and development of 1 375 students, including 779 masters-level students, 330 doctoral candidates and 45 postdoctoral researchers, through grantholder-linked bursaries and fellowships.
- The NRF manages the DST/NRF Centres of Excellence Programme, which annually disburses almost R50 million to seven centres. Under the South African Research Chairs Initiative (SARChI), there are research chairs in the following areas: Catalysis, Strong Materials, Invasion Biology, Birds as Keys to Biodiversity, Tree Health Biotechnology, Epidemiological Modelling and Analysis, and Biomedical TB Research. Two new centres (in Global Change and Biosafety) are in the process of being established. The DST-funded initiative has, since its inception (in 2005), trained more than 390 postgraduate students (an average of 55 students per centre) and has produced more than 570 journal articles.

## **Human capacity development: Support for students and researchers**

- Some 411 students were involved in postgraduate training at the national research facilities.
- Staff of the national research facilities supervised 217 masters and doctoral students.
- A total of 7 351 students (of which 56% were black and 47% were women) were supported by RISA through all funding programmes.
- Some 420 MSc and doctoral students were supported through the Department of Labour Scarce Skills Development Programme.
- The Technology and Human Resources for Industry Programme (THRIP) supported 1 971 students (of which 57% were black and 37% were women).
- In January 2009, the first annual research day was hosted for interns who had completed a year of internship at the respective host institutions. Sixteen of these DST/NRF interns, comprising almost 20% of the 2008/09 cohort, are now furthering their studies through studentships and full-time study programmes.
- SARChI is designed to significantly expand the scientific research base of the country in a way that is relevant to national development and in support of making South Africa an internationally competitive global knowledge economy. Eighty research chairs are in operation and 380 students (of which 58% were black and 43% were women) were supported through SARChI during 2008/09.
- Some 420 master's and doctoral students were supported through the Department of Labour





Scarce Skills Development Programme.

- THRIP supported 1 971 students (of which 57% were black and 37% were women).
- A total of 2 650 grants to the amount of R321 million were made to researchers from the discretionary budget.
- The number of rated researchers in South Africa increased from 1 653 in 2007/08 to 1 922 in 2008/09.

### Research platforms and competitive research activities

The NRF serves as a central node for infrastructure and data in the national Research Information Management Systems project, which currently involves seven universities and nine science councils, and is intended to give government access to accurate and up-to-date information on research inputs and outputs.

The investment of the NRF in research equipment at higher education institutions amounted to R92,3 million, R13,6 million of which went to equipment for nanoscience.

During 2008/09 the NRF again invested in research infrastructure (R365 million, excluding the Square Kilometre Array investments) at the national research facilities. The infrastructure platforms allowed the national research facilities to provide access to researchers and enabled international research collaboration. Below are some examples.

**The South African Astronomical Observatory** initiated several programmes with the Southern African Large Telescope: a study of dust extinction in nearby galaxies with Tel Aviv University (Israel); a search for evidence of X-ray reprocessing in high mass X-ray binaries with the University of South Hampton (UK); an investigation of the mutual eclipse and occultation events of the satellites of Uranus with Armagh Observatory (Northern Ireland); and a preliminary imaging study of likely galaxy clusters with Rutgers University (USA).

A team of South African and Japanese astronomers completed an extensive study of local group galaxies using the Japanese/South African Infrared Survey Facility at Sutherland.

**Hartebeesthoek Radio Astronomy Observatory (HartRAO)** scientists and engineers have been involved in developments leading to the construction in the Karoo region of the MeerKAT array of 80 antennas and its prototype seven-element array, KAT-7. The original prototype antenna for these arrays, the XDM, was built at HartRAO in 2007 and has been undergoing testing since then. HartRAO has formed a Scientific and Technical Operations Group to lead the scientific operations of the KAT-7 and MeerKAT instruments.

**The Hermanus Magnetic Observatory (HMO)** has established a space weather website as part of the International Space Environment Service Space Weather Regional Warning Centre for Africa. HMO also installed a new digital ionosonde. A new antenna array for the SuperDARN HF radar in Antarctica was installed following damage to the old array during very strong wind.

**The South African Institute for Aquatic Biodiversity** runs the major marine flagship project, the African Coelacanth Ecosystem Programme (ACEP), which is funded by the DST and managed through the South African Environmental Observation Network Elwandle Node as a joint venture with Marine and Coastal Management. The ACEP II research programme was finalised during 2008, and eight proposals received funds. The programme is scheduled to run from 2007/08 until 2011/12.

**The South African Environmental Observation Network** was involved in over 30 international science initiatives with countries in Europe, North and South America, Australia and Africa. The functional nodes were allocated seed-funding to initiate projects with the Environmental Long-term Observatories of Southern Africa. The Fynbos Node took part in an international





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programme of the International Long-term Ecological Research Network to assess the linkages between ecosystem services and community livelihoods.

**The National Zoological Gardens of South Africa (NZG)** established the Centre for Conservation Science as a hub for research in the two focus areas of conservation biology and conservation medicine. The development and promotion of conservation medicine as a research focus aligns the NZG internationally with the Conservation Breeding Specialist Group under the World Association of Zoos and Aquaria. This opens up opportunities for collaboration and provides the NZG with access to disease risk-assessment tools.

**IThemba Laboratories for Accelerator-Based Sciences** is part of an international collaboration programme between the European Centre for Nuclear Research (CERN) and South African universities. It was officially launched in December 2008. The collaboration seeks to provide research platforms for South African scientists and students to take full advantage of the latest accelerator technologies offered at CERN. The South African universities involved include the universities of the Witwatersrand, Cape Town, KwaZulu-Natal and Johannesburg, as well as Rhodes University.

## HUMAN SCIENCES RESEARCH COUNCIL



### Mandate

The mandate of the Human Sciences Research Council (HSRC), in terms of the new Human Sciences Research Council Act, 2008, is to initiate, undertake, foster and publish basic and applied research in the human sciences relevant to developmental challenges in South Africa, elsewhere in Africa and in the rest of the world, especially by means of projects linked to public-sector oriented collaborative programmes; to inform the effective formulation, monitoring and evaluation and implementation of policy; to stimulate public debate through the effective dissemination of the results of research; to help build research capacity and infrastructure for the human

sciences in the country and elsewhere in Africa; to foster and support research collaboration, networks and links with other organisations within the human sciences research community; to respond to the needs of vulnerable and marginalised groups in society by researching and analysing developmental problems; to develop and make publicly available new data sets to underpin research, policy development and public discussion of the key issues of development; and to develop new and improved methodologies for use in their development. All these actions contribute to improving the quality of life of the people of this country and this continent.



## SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

### *Social science that makes a difference*

During 2008/09, the HSRC undertook a great variety of projects, 188 in total, as well as various other activities, all intended to make a difference to the lives of the people in South Africa, the Southern African Development Community and the continent through research themes relevant to government policy priorities. The accompanying highlights provide a selection of some of the most significant undertakings of the HSRC in the 2008/09 financial year, which include topics like democracy and governance, education, governance and society, children and youth, service delivery, poverty and job creation.

### **Democracy, governance and society**

#### *Study of violent offenders*

This study engaged with the critical question of why certain individuals turn to violence as a way of life. Working with the Centre for the Study of Violence and Reconciliation, researchers participated in a national study of violent offenders in South African prisons. The project has contributed to a deepened understanding of why specific individuals become involved in violence. In contemplating measures to address causes, the study attempted to answer questions about possible interventions that could assist in preventing violence and rehabilitating violent offenders.

#### *15-year review of the Free State Provincial Government*

Assessing the performance of the Free State Provincial Government in the 15 years since the attainment of democracy in 1994, the HSRC evaluated the successes, challenges and opportunities of democratic transformation and how the government of the Free State had performed in managing intended policy objectives as the country entered another stage of change. The study determined the challenges and opportunities facing

the provincial government, the causes behind these, the material conditions of the people of the province, development opportunities, and the imperatives for future democratic transformation.

#### *Violence and xenophobia*

A project on violence and xenophobia in South Africa has made a constructive and meaningful contribution to deepening the knowledge and understanding of the factors that resulted in the violent xenophobic attacks in South African communities in May 2008, leading to the deaths of 50 people and the displacement of tens of thousands more. The rapid response and interventionist nature of this work has contributed meaningfully to the issue as a current priority on the national agenda. Research questions leading from this research included links between xenophobic attitudes, gender and male violence; and the role of religion in xenophobia in South Africa. The research outcomes of this work have been reported on positively in the media, and have attracted the interest of civil society, government and the international community.

#### *History of traditional leadership*

The HSRC has been selected to lead a research effort to establish a knowledge base for deepening the understanding of the history of various traditional leadership governance systems in KwaZulu-Natal. This includes the recording and preservation of associated cultural and customary practices and capacity building in order to provide more meaningful support to traditional leaders by the Department of Local Government and Traditional Leadership, the Zulu Royal House, and institutions of traditional leadership.

#### *State of the Nation*

The *State of the Nation* book series is a sought-after flagship HSRC publication, distributed to every South African government department and embassy in the world. Through the insightful contributions and analyses



of the diverse and highly acclaimed team of authors assembled by the programme, the series maintains its proud publication record of charting developments in various sectors of post-apartheid South Africa, as well as the country's role in Africa and the rest of the world.

### ***Peace in the Middle East***

A two-year project to assess political developments in the Middle East is under way, providing an independent research and analysis arm for the South African government during its tenure on the UN Security Council. So far it has produced, among other things, timely briefing papers, substantive reports, closed conferences with visiting experts on the Middle East, open lectures by visiting experts, briefing papers and brochures.

### **Studies on education**

#### ***Effective functioning of the teacher education system***

In the past four years, the HSRC has conducted research aimed at making a significant contribution to resolving key obstacles to the effective functioning of the teacher education system. Twelve publications have emerged from this research. Key achievements include the following:

- Important contributions to the Department of Education's 2007 National Policy Framework for Teacher Education and Development.
- A differentiated analysis of trends in supply and demand data for teachers, necessary for planning the system.
- Providing the research necessary for the Department of Education to develop a systematic national teacher upgrading plan, including piloting a process to obtain useful data on teacher qualifications.
- Providing in-depth, original information about the impact of restructuring teacher education, especially the teacher education curriculum, suggesting a moratorium on institutional change, and a

deepening of relationships between universities nationally and between universities and education departments.

#### ***Scarce and critical skills research***

The Department of Labour commissioned a large project involving applied research to measure the impact of labour and skills legislation on social processes in the labour market and economy. The research included the extent to which workers acquired skills, unemployed youth were trained and employed, and designated groups benefited from the Department of Labour's employment equity programmes. The Department of Labour Research Consortium Project probably constituted the largest such research initiative on labour market and skills development dynamics since the 1996 International Labour Organisation report on the labour market. These studies were groundbreaking in providing comprehensive impact assessments of key post-apartheid labour market legislation on equity and efficiency in the South African labour market. Close to 50 researchers from the consortium were involved in the project, which generated about 45 research reports. The sector skills study provided insightful analysis on the complexities of attaining alignment between the skills development strategies and micro-economic priorities in 14 key subsectors in the economy. This study generated 14 reports and a book, Kraak, A (Ed.). (2008) ***Sectors and Skills: The need for policy alignment. HSRC: Cape Town***, with chapters on each of the key professions. The third in the series, the National Skills Survey 2007, provided insight into progress in training in private sector employers and sector education and training authorities, and an indicator of progress in training provision since the survey in 2003. Interestingly, the study showed that while the volume of training had doubled, real expenditure on training had declined for small and medium-sized employers since 2003. The scarce and critical skills study contributed towards the development of a model for the identification and verification of vacancies and scarce skills in the economy, as well as 12 critical occupations, including engineering and artisan trades. It found that

there were definite skills shortages in certain occupations, while raising questions about the effect of affirmative action policies in dealing with shortages.

### ***Studies on supporting quality education***

A long-term study project intended to provide research support to government and other key participants in the education system (teachers, parents, learners, NGOs and donors) achieved several milestones. The project aims to assist government in the decision-making processes involved in implementing relevant and effective strategies that could improve education quality at all levels of the system. The achievements were as follows:

- A prototype of a computerised item bank was developed and demonstrated to officials of the Department of Education.
- A policy dialogue forum brought together national and international education experts and policy makers to discuss strategies to improve assessment systems and practices aimed at improving education quality in developing nations. The proceedings of the conference will be published as a book by the HSRC Press in 2010.
- The establishment of the HSRC/Tshwane University of Technology (TUT) postgraduate programme on improving education quality and capacity in education quality research. It is aimed at senior education officials in national and provincial government. Three senior officials and a research trainee from the Centre for Education Quality Improvement are currently enrolled in the programme. Dr Anil Kanjee, who heads the centre, has been appointed a Professor Extraordinaire by TUT to allow him to supervise these students.

### **Studies on science and innovation**

#### ***Research, development and innovation***

Apart from the baseline South African research and development (R&D) survey of 2001/02, the HSRC has now completed four full R&D surveys on behalf of the

DST. The methodology and data provided in the 2006/07 R&D Survey report have been approved by Statistics South Africa and awarded the seal of approval by the Statistician-General. The HSRC also undertook South Africa's first official innovation survey on behalf of DST and ***Main results of the South African Innovation Survey 2005***, authored by William Blankley and Cheryl Moses, has now been published as a book by the HSRC Press. In terms of the NEPAD African Science, Technology and Innovation Indicators project and in response to a formal request from the Director of Malawi's science and technology department, South Africa's DST requested the HSRC to provide two experts to deliver an appropriate three-day training workshop on R&D and innovation surveys and indicators for 10 senior Malawian government and university employees in Lilongwe, Malawi, from 17 to 19 November 2008. Earlier in the year, training was also provided on R&D and innovation surveys to a delegation from the Namibian science and technology department in Cape Town, and to NEPAD officials.

#### ***Knowledge and transformation: Social and human sciences in Africa***

The HSRC, together with the International Social Science Council (ISSC), the Council of Philosophy and Humanistic Studies (CIPSH) and the NRF hosted a symposium on knowledge and transformation: social and human sciences in Africa on 27 and 28 November 2008. The symposium was the scientific highlight of the joint general assemblies of the ISSC and CIPSH, and was coordinated by the HSRC at Spier, Cape Town. The scientific agenda of the symposium focused on the production of knowledge by Africans and knowledge on Africa, and the contributions of human and social science to innovation and development in Africa. More than 200 top social scientists and African scholars participated and submitted papers. Topics included the African Diaspora, gender, social policy and democratic development in Africa, knowledge for development and innovation in Africa, reflexivity, learning, and quality education in Africa, health, society and the African public space and food



security, and migration and climate change in Africa. The symposium was well attended, with close to 200 participants. Papers presented in the symposium will be published by the HSRC Press in a book called *Knowledge and Transformation: Social and Human Sciences in Africa*.

## **Studies on the world of work**

### *Employment scenarios*

Employment scenarios developed by the HSRC in 2007 were regularly highlighted as one of the main sets of proposals for the South African economy going forward. In 2008/09, the next step was establishing methodologies to determine the long-term employment path for South Africa. This was done in partnership with the Department of Trade and Industry and the Directors-General Economic and Employment Cluster. These methodologies will support the government's plans to establish planning and monitoring and evaluation functions in the Presidency. In addition, the employment scenarios were updated to take into account the impact of the global economic crisis, and a policy package that would enable the halving of unemployment, even within the context of the economic slowdown, was identified with key stakeholders.

### *Employment creation with the City of Tshwane Metropolitan Municipality*

The HSRC signed a memorandum of understanding with the City of Tshwane Metropolitan Municipality that led to the establishment of a Centre of Excellence on Employment Creation. Tshwane is contributing R28 million over three years to test innovations in the policy process with the aim of identifying ways of intensifying employment creation. The three areas receiving attention include employment through procurement, employment through early childhood development (for children under five), and enhancing the employability of school leavers. The HSRC's role is to identify innovations, work with implementing agents, and monitor and evaluate the outcomes of the intervention.

## **Studies on HIV, Aids and health**

### *HIV survey on prevalence, behaviour and communication*

One of the major accomplishments in this area was the completion of the fieldwork for the 2008 national HIV prevalence, behaviour and communication survey. This was the third such survey, following surveys in 2002 and 2005, showing trends in the progression of the epidemic over time. The report was released in early June 2009, outside the reporting period, but was exceptionally well received by the government and civil society and provided a useful yardstick of progress towards addressing the HIV/Aids problem. In particular it will contribute towards the mid-term review for the National Strategic Plan for HIV and Aids and STIs 2007-2011 (NSP), which seeks to half new HIV infections by 2011 and to have up to 80% of people who need ARV treatment receiving it.

### *Implementation, monitoring and evaluation of the National Strategic Plan*

Working closely with other researchers and institutions in the country, the HSRC has continued to play an important role in the implementation and monitoring and evaluation of the NSP in South Africa, mainly through the research sector of the South African National Aids Council. It has also made a significant contribution to efforts to combat HIV through developing and evaluating theory-based HIV risk-reduction social and behavioural interventions, including research on traditional healing and male circumcision. The HSRC conducted training for national and provincial officials and people working in non-governmental organisations, both on monitoring and evaluation issues and structural and behavioural interventions.

## **Studies on service delivery**

### *Measuring service delivery in southern Africa*

This ongoing, multi-country assessment project in selected southern African countries, funded by the Southern African Trust, explores the challenges of meeting key service delivery targets implicit in the Millennium Development



Goals. The HSRC and partners support progress by undertaking country studies, constructing tools of analysis and drawing out lessons for assessment, policy and practice. The HSRC manages the entire research process. Country workshops serve to set up implementation networks between government, civil society and researchers, carrying forward ideas and strategies arising from the research. The purpose of the implementation networks is to present research results, identify demonstration models, and advocate these for replication. The networks operate at a global level with regional civil society bodies and trade unions, with the World Health Organisation/ UNICEF monitoring bodies and with the Norwegian Comparative Research Programme on Poverty. Networks in the different countries operate as follows:

- In Tanzania, the network includes leading government officials, NGOs and researchers.
- In Malawi, the network works with the Minister of Local Government and other leading officials, HIV/ Aids action groups, the media, and representatives of civil society organisations.
- In South Africa, partners include the Department of Housing, the People's Housing Process (Western Cape Department of Local Government and Housing), local government, civil society and social movements. In terms of the government's service delivery improvement plans, participants from the leading and other departments are required to report in terms of this framework.

At this stage the project has had a diffused impact through the implementation networks initiated during and after its workshops. High impact is anticipated in the final stage where the reports are drawn together and the full range of networks is activated. Regular regional workshops bring together researchers from the four participating countries, comparing implementation models in service delivery improvements and case studies for possible replication.

#### ***Tshwane service delivery demonstration project***

A project with the City of Tshwane Metropolitan

Municipality comprises three components of a service delivery demonstration project, namely, analysing institutional blockages to service delivery; better mainstreaming the municipality's Expanded Public Works Programme; and a profiling exercise of Tshwane's regional spatial development framework. Using evidence-based knowledge to generate practical solutions to problems of planning and implementation, the project aims to enhance local interventions and innovation through a systems approach. The project will be conducted over three years and has proposed several mechanisms to improve the three components. Recommendations deriving from the above that are deemed to improve the quality and rate of service delivery in Tshwane will relate, among others, to how intergovernmental relations need to be structured to optimise implementation; how budgets need to operate; how capacity development can be achieved; and how users need to be understood and mobilised to optimise service planning and delivery.

#### ***Electricity price determination***

In another project, the HSRC gave critical guidance to the key stakeholders in the multi-year electricity price determination. Its recommendations were largely adopted by the electricity regulator, NERSA, and have set expectations in the market and for Eskom.

#### ***Centre for Poverty, Employment and Growth***

#### ***Migration research***

Migration research focuses on both internal migration and immigration dynamics. In 2008, a DST-funded pilot survey on internal migration in the Sekhukhune-Gauteng corridor was completed. The success of this project led to DST's approval of phase 2, which will produce a fuller national review of internal migration in four corridors. This will be the first major dataset on internal migration, revealing determinants of movement and service delivery implications. This project is being implemented in partnership with the CSIR. The HSRC has also established a joint reference group on migration





with top economists in the African Economic Research Consortium, as part of its efforts to understand African migration in respect of South Africa.

## **Studies on poverty and development**

### *Social inclusion and exclusion*

A groundbreaking conference on gender, same-sex sexuality and HIV/Aids in South Africa in May 2007 led to several research opportunities in the area of same-sex sexuality and HIV/Aids. In the past financial year the American Foundation for Aids Research awarded funding for a project on minority stress, social support, and sexual risk in South African men who have sex with men (MSM). The principal investigator for this ongoing study is Dr Theo Sandfort, a research scientist at the HIV Center for Clinical and Behavioral Studies, and associate professor of Clinical Socio Medical Sciences in Psychiatry at Columbia University. Prof. Vasu Reddy of the HSRC is the South African principal investigator. This study examines stigma and the understanding of risky behaviour among MSM, their specific mental health needs, and how these relate to their sexual risk. This project is currently at fieldwork stage and will be completed in the 2009/10 financial year.

### *Women in science*

This research project was an assessment of the participation of women in industrial science, engineering and technology in South Africa and a client report was submitted to the National Advisory Council on Innovation in July 2008. The report included recommendations, a best practice guideline, and a summary packaged as a user-friendly information brochure.

### *Social policy framework for Africa*

The African Union (AU) commissioned the HSRC to draft a social policy framework, which was presented to the AU Conference of Ministers in October 2008 and incorporated into the Windhoek Declaration on Social Development. The framework aimed to assist AU member states to address the compelling and pervasive

socio-economic challenges facing the continent. It was required to be comprehensive and analytical, harmonising all adopted continental and international social development instruments, positioning social development on the development agenda, and moving away from treating social development as subordinate to economic growth, as had been the case with previous drafts of the framework. The social policy framework received further endorsement from the AU Executive Council of Ministers, and the Assembly of Heads of States and Governments in Addis Ababa in January 2009.

## **Studies on youth and children**

### *Joint Learning Initiative on Children and Aids*

The HSRC was a founding member of the Joint Learning Initiative on Children and Aids (JLICA) in late 2006. As a global network of policy-makers, most recently acknowledged in *The Lancet* as laying out a new agenda for children affected by Aids, the work of this group culminated in a final report launched in London in 2009. Since the launch of the final report, members of the JLICA steering committee have participated in a number of dissemination activities. A South African launch of the report is being planned jointly with UNICEF South Africa.

### *International Aids Conference, Mexico City*

For the first time in 23 years, a plenary paper (addressing the wellbeing of children affected by HIV/Aids) was invited at the International Aids conference. Prof. Linda Richter, who heads the Child, Youth, Family and Social Development Programme at the HSRC, focused her comments on the neglect of children in the global response to the epidemic, recommending that a strong emphasis be placed on the strengthening of families.

## AFRICA INSTITUTE OF SOUTH AFRICA



### Mandate

The mandate of the Africa Institute of South Africa (AISA) is to promote knowledge and understanding of African affairs through social scientists acting in concert and across all disciplines and through training and education on African affairs; to collect, process and disseminate information on African affairs; to give effective advice and facilitate appropriate action in relation to the collective needs, opportunities and challenges of the continent; and to promote awareness and consciousness of Africa at grassroots level.

On the basis of the above and the five grand challenges identified in the DST's Ten-Year Innovation Plan for South Africa, the institute pursues a number of aims:

- Providing research and policy development support in pursuit of programmes that could contribute to the development of the African continent.
- Conducting training programmes that promote increased awareness and understanding of the African continent.
- Improving the skills capacity of young researchers in the social science arena through the AISA Young Graduates and Scholars programme, the AISA Campus Lecture Series and internship programmes.
- Propagating the publication of research on Africa in Africa.
- Promoting access to information on Africa.
- Creating platforms to discuss and debate socio-economic and political issues in Africa.
- Establishing and maintaining networks in Africa and globally, which will contribute to the peace and prosperity of the continent.

### SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

By the beginning of the financial year, all senior management vacancies had been filled, except for the Executive Director: Research, who started work in May 2008.

AISA attained a disclaimer from the Auditor-General in 2006/07 and a qualified report in 2007/08, as attention was focused primarily on improving the control environment while executing daily operational duties. The unqualified audit report AISA received for 2008/09 is testament to the development and approval of many human resource and financial policies, complying with mandatory reports and implementing procedures to improve operational efficiencies and the quality of outputs.

To improve the quality of outputs, the AISA Council approved a three-year research agenda, focusing on African integration, as well as the restructuring of the research division, which now has five units (Sustainable Development, Governance and Democracy, Peace and Security, Policy, and Science and Technology). In addition, many quality assurance mechanisms were implemented.

Although the restructuring of the research division allows AISA to address some of the challenges mentioned in the DST's Ten-Year Innovation Plan for South Africa, AISA's mandate spans socio-economic, political and development issues in the whole of contemporary Africa, and AISA's role is therefore on the implementation of the





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Ten-Year Innovation Plan within the African Union and NEPAD framework. Creating healthy platforms for social and economic debate will harmonise the development, management and protection of intellectual property in Africa, as well as skills transfer, all of which will contribute to a knowledge-based economy.

AISA established a Research and Publication Committee as an internal quality assurance mechanism to approve research proposals before fieldwork research is conducted. Hosting seminars prior to finalising research outputs was also institutionalised to allow researchers to incorporate perspectives that might have been overlooked.

The publications division commenced a campaign for scholars to publish outputs about Africa in Africa by marketing AISA as a quality output channel. Manuscripts received by AISA must pass internal quality assurance checks performed by the editorial committee and a double-blind peer-review process before they are published. In an attempt to rejuvenate and modernise the Library and Documentation Services product offering and knowledge production capabilities, a GIS component was added.

Support divisions to a large extent created policy and procedural frameworks to improve the control environment and eradicate audit queries. Although 20 human resource and eight finance policies were amended or developed, AISA must review a few financial policies in order to be fully compliant with legal and accounting prescripts.

Apart from improving AISA's media presence and stakeholder relations, building more strategic partnerships with the international community, and increasing fundraising efforts, AISA is planning to work on NEPAD and AU programmes.

AISA signed and implemented nine memoranda of understanding (MoUs) with institutions in South Africa, Egypt, Nigeria, Zambia, Kenya, Argentina, Switzerland and the USA. Areas of cooperation in the MoUs varied

widely. For example, in the MoU with the NEPAD Secretariat, AISA approved the secondment of an officer to work for NEPAD for two days a week for a period of six months, while other MoUs involved the exchange of publications and participation in conferences, seminars and workshops. AISA is currently exploring possible joint research projects with selected partners.

AISA's Executive Director: Research, Dr Monica Juma, was appointed by the United Nations Secretary General to a panel examining peacekeeping issues in Africa. The report produced by the panel, the Prodi Report, which focused on resourcing peacekeeping in Africa, was debated by the UN Security Council on 18 March 2009.

By arranging all media appearances at no cost, and by obtaining sponsorship to International conferences, a conservative cost saving of approximately R3 m was effected. Funds of R1,84 m were raised for the Zimbabwe Lecture Series and Women and Security: Engendering the African Defence Sector project, which will commence in 2009/10. AISA will endeavour to strengthen its efforts in these areas to decrease its dependence on the government grant.

Going forward, AISA will make continual efforts to effect closer cooperation between divisions, improve efficiencies, increase AISA's footprint, reduce overheads and achieve higher outputs by commissioning work to obtain greater coverage of developments in Africa.



## ACADEMY OF SCIENCE OF SOUTH AFRICA



### Mandate

The mandate of the Academy of Science of South Africa (ASSAf), established under the Academy of Science of South Africa Act, 2001, is to link South Africa with scientific communities at the highest levels, in particular within the Southern African Development Community, the rest of Africa and internationally; to promote common ground in scientific thinking across all disciplines, including the physical, mathematical and life sciences, as well as human, social and economic sciences; to encourage and promote

innovative and independent scientific thinking; to promote the optimum development of the intellectual capacity of all people; and to promote effective advice and facilitate appropriate action in relation to the collective needs, opportunities and challenges of all South Africans.

ASSAf, as the only national science academy to be officially recognised by the South African government, is tasked with providing direction, and investigating and generating evidence-based advisories on issues of public interest as they relate to scientific research.

## SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

### Developing evidence-based project activities

Evidence-based study project activities form the core of the Academy's function and are a key area of future development. During this past reporting cycle, there has been a dramatic increase in the number of evidence-based projects. The hosting of workshops and the involvement of members in project-related activities have also increased.

The following studies were initiated or continued during the 2008/09 financial year:

#### *State of humanities in South Africa*

The Humanities Consensus Study seeks to interrogate the status of the Humanities and their prospects, and to restore their value within the broad scholarly arena and in South African society at large. The objectives of this study are to:

- provide a detailed survey on the state of the humanities in South Africa;

- profile the status of humanities graduates in South Africa and beyond; and
- generate strategies that would strengthen the humanities in and outside of the university and the Academy.

#### *PhD study: Enhancing the production of postgraduates in South Africa*

This project was commissioned by the NRF, the DST, the former Department of Education, the Council on Higher Education and other stakeholders. There is broad consensus in the South African science community that not enough high-quality PhDs are being produced in relation to the developmental needs of the country.

It is anticipated that a ten-fold increase in the number of PhDs is required. This need raises fundamental questions about national capacity, critical partners, innovative programmes, strategic investments and cross-sectoral cooperation.





# THE PUBLIC ENTITIES REPORTING TO THE DEPARTMENT OF SCIENCE AND TECHNOLOGY

## ***Science, technology, engineering and mathematics education***

The committee responsible for the STEM forum-type study aims to serve as the interface between academic institutions and education authorities in matters related to school curricula. It will, among other things, review examinations and assessment at school level and investigate curriculum concerns.

## ***Clinical research and related training in South Africa***

This consensus study aims to contribute to building a national culture in which clinical research is seen as essential, and clinical trials are widely accepted and promoted. It has investigated how to best equip and encourage clinicians-in-training to embrace clinical research and evidence-based practice as indispensable elements in delivering effective health care; how to ensure that clinical research flourishes in South Africa under conditions that protect the rights and safety of individuals; and how to ensure that government, parastatal institutions, academia and industry interact more constructively to create a favourable and enabling environment for clinical research to be conducted. The study panel, consisting of 15 experts, met three times during this reporting period and six working groups were set up, assisted by two experienced part-time researchers. The final report is nearing completion and will be sent for peer review.

## ***Science for poverty alleviation***

ASSAf originally constituted its Committee on Science for Poverty Alleviation to contribute to one of the five new national missions outlined in the National Research and Development Strategy. The committee was augmented in 2007 to generate forum-type studies of selected topics in three broad areas to assist government policy-makers and others in the fight to alleviate poverty in South Africa. The three broad multidisciplinary areas were small-scale agriculture, the health of poor communities, and general environmental and other sustainability aspects of smaller (secondary) cities. In the

year under review, the Academy convened a workshop on local economic development in small towns in June. Workshop proceedings were printed.

A forum study on improving maternal, newborn and child health in Africa was approved and a part-time researcher to assist with the compilation of the policy-makers' booklet on this, which is due to be distributed at the African Science Academy Development Initiative meeting in Ghana in November 2009. ASSAf has obtained funding from the Inter-Academy Panel for a study on GMOs in Africa: Challenges and Opportunities and will undertake a forum-type study.

## ***Improved nutritional assessment in South Africa***

The study is conceived as a follow-up to the consensus report on *HIV/Aids, TB and Nutrition* (2007). One of the key findings of the 2007 report was the national deficit in modern nutritional assessment methods, particularly tests of micronutrient status that were grounded in the most up-to-date understandings of relevant physiology and pathological chemistry, and were reliable, affordable and practically helpful. The aim of the follow-up study is to address this finding, seeking to identify the best assessment modes to contribute to the prevention and treatment of these pandemic infectious conditions in the country. The six micronutrients identified as being most significant are vitamins A and D, folate, and the trace elements zinc, selenium and iron. The 10-member panel held its first meeting in February 2009.

## ***Standing Committee on Biosafety***

A Standing Committee on Biosafety has been established. The brief of the committee is to establish whether or not there is an oversight mechanism in South Africa to regulate the conduct of safe science, raise awareness of scientists about risks involved, and address the extent of the implementation of biosafety measures in laboratories and what needs to be improved. Good laboratory practice is one area of relevance to the activities of this committee. The Academy attended a workshop, hosted by the Uganda National Academy

of Science, on establishing and promoting standards and good laboratory practice for running safe, secure and sustainable laboratories in Africa in January 2009. Discussions on biosafety and biosecurity issues were held with the Department of Foreign Affairs and the Department of Trade and Industry.

Plans are also underway to expand project activities into the important areas of energy and climate change.

### **International recognition**

ASSAf has received increased international recognition.

#### ***African Science Academies Development Initiative***

The African Science Academies Development Initiative (ASADI), funded by the US National Academies, continues to provide an effective vehicle for capacity development and improving cooperation between African science academies and their members/fellows. ASSAf was represented at the ASADI leadership meeting, hosted by the Institute of Medicine, in Washington, DC, in April 2008. The meeting provided a useful opportunity to gain insights into various operational issues. Future funding opportunities were discussed with the Gates Foundation. ASSAf attended a workshop for financial officers and managers from ASADI countries.

The fourth annual conference and training sessions of the ASADI members and other Network of African Science Academies (NASAC) members were held in London in November 2008. The 2009 ASADI annual meeting, with a focus on improving maternal, newborn and child health in Africa, is scheduled to take place in Ghana in November 2009. ASSAf is taking responsibility for the production of a policy-makers' booklet on the topic and to this end will be organising a series of workshops featuring national and international experts.

ASSAf will also host the 2010 ASADI annual meeting, and will embark on planning for this activity during the 2009/10 financial year. The focus of the meeting will be on energy. The ASSAf partnership with the US

National Academies through the ASADI development programme continues to make a major contribution to the development and recognition of the Academy.

#### ***Network of African Science Academies (NASAC)***

ASSAf is a founder member of NASAC, and is currently a Vice-President. During the past financial year, ASSAf partnered with NASAC on a variety of activities (e.g. the Inter-Academy Panel water project) and will devote much energy to playing a leading role in NASAC activities in 2009/10. These include an initiative to strengthen existing academies and assist in the creation of new academies in the southern African region. Planning for this commenced during the reporting period.

#### ***InterAcademy Panel (IAP)***

ASSAf is one of over 100 member academies of the IAP, the headquarters of which are in Trieste, Italy. ASSAf can thus enhance its national science academy role within our country by drawing on the experience and capacity of the world's science academies for South Africa's benefit. ASSAf has been successful in securing funding for many collaborative projects through the IAP, on, for example, science education, genetically modified organisms in Africa, challenges and opportunities, and water.

#### ***InterAcademy Council (IAC)***

The President of ASSAf has been elected to serve on the Board of the Inter-Academy Council (IAC) from 2009 to 2013. Prof. Robin Crewe attended his first meeting of the IAC Board in March 2009 in Amsterdam.

#### ***Inter-Academy Medical Panel (IAMP)***

ASSAf's membership of the IAMP provides valuable contact with the world's main medical academies and a focus on the health problems of the developing world. Prof. Anthony Mbewu, President of the Medical Research Council, is currently a Vice-Chair. ASSAf will host the IAMP General Assembly in 2010.





## *The Academy of Sciences for the Developing World (TWAS)*

ASSAf is an active collaborator of TWAS, which has programmes to stimulate scientific development in developing countries and co-sponsors ASSAf's Young Scientist Award. In 2008, the award was made to 34-year-old Prof. Stefan Ferreira, a physicist from North-West University. Discussions are underway to further promote TWAS fellowship schemes and to establish TWAS and TWOWS (Third World Organisation of Women Scientists) chapters in South Africa. A general conference is held in a developing country every three years to review the status and future prospects of science and technology in various regions, and South Africa will be hosting the 2009 TWAS General Conference in Durban, which will significantly increase ASSAf's profile and role in TWAS. Planning for this significant event commenced during the reporting period. One of the expectations is for ASSAf to produce a book on the state of science in South Africa. Authors and reviewers for the various chapters have been identified and work is underway.

## **G8 + 5 academies**

A significant outflow of ASSAf's membership of the IAP has been its continuing inclusion in the annual meetings of the G8 + 5 academies, where the national science academies of the 13 countries discuss key issues of common interest and provide evidence-based advice to the heads of state at the G8 + 5 summit meeting. In addition, they issue consensus statements to international bodies and the world media/public. In March 2009, the meeting took place in Rome and a joint statement on energy was compiled. NASAC, together with individual member academies, also issued a statement on the brain-drain problem in Africa.

## **Bilateral agreement with the Russian Academy of Sciences**

The bilateral agreement with the Russian Academy of Sciences was strengthened through the joint hosting of a workshop in Cape Town in February 2009. The

purpose of the workshop was to identify priority areas of collaboration in the fields of biotechnology, nanotechnology and cyberinfrastructure.

## **Scientific scholarly excellence**

ASSAf continued recognising and raising awareness of scholarly excellence.

## **ASSAf Science-for-Society gold medals**

ASSAf annually awards up to two ASSAf Science-for-Society gold medals for outstanding achievement in scientific thinking for the benefit of society. In 2008, gold medals were presented to Prof. Michael Samways and Prof. Michael Wingfield. The Academy also introduced a special gold medal award for outstanding meritorious service, which was awarded to Prof. Wieland Gevers, former President and Executive Officer of ASSAf. The Academy will call for nominations for further gold medal awards during 2009.

## **Annual symposium**

At least one national open symposium is held annually. The theme of the 2008 symposium was "Energy in South Africa: Challenges and Opportunities". There were three invited presentations. Prof. Emile van Zyl, Research Chair for BioEnergy from Stellenbosch University, gave a presentation on biofuels, Benedict Magadime of the Department of Public Enterprises addressed the skills challenges in the energy sector; and Dr Phindile Masangane of the South African National Energy Research Initiative focused on the gap between the development and the implementation of energy technologies.

## **ASSAf visiting lecturer**

The Academy annually brings an outstanding international scientist to South Africa for a series of lectures in the main regional centres. The ASSAf visiting lecturer in 2008 was Prof. Saul Dubow of Sussex University, who



has made a major contribution to our understanding of not only the history of South African science, but also how scientific knowledge has helped to shape the country. Prof. Dubow's lecture, "Social Aspects of Science in South Africa", was presented in Gauteng, Cape Town, Grahamstown and Durban.

#### ***Sydney Brenner Fellowship***

Dr Sydney Brenner donated a portion of his 2002 Nobel Prize to ASSAf to permit ASSAf (in partnership with the US National Academies) to offer a prestigious postdoctoral fellowship for research to be undertaken in South Africa over two years by an outstanding young scientist. Dr Brenner personally mentors the fellows during and after tenure of the fellowship. The Oppenheimer Memorial Trust has donated funds for a second fellowship. ASSAf bears the administrative costs and supplements the stipends to ensure the success of the scheme.

#### ***Regional public lectures***

ASSAf partners with other organisations with local chapters to offer public lectures on a range of topics in the principal South African cities. The lectures are widely advertised and generally well attended. The lectures are offered regularly at the University of Cape Town, Rhodes University and the University of KwaZulu-Natal. The intention is to expand the number and geographic spread of these public lectures in the coming year.

#### **Scholarly Publishing Programme**

The ASSAf report on *A strategic approach to research publishing in South Africa*, was published in March 2006, and presented to the Ministers of Science and Technology, and Education, as well as the National Advisory Council on Innovation, Higher Education South Africa, the Council on Higher Education/Higher Education Quality Committee, and the Southern African Research and Innovation Management Association, among other producers and users of published research

and scholarship. The report's 10 recommendations are being implemented. Multi-year funding for the implementation programme has been obtained from the DST. While the 10 recommendations were directed at key implementers and stakeholders, ASSAf was identified as the key integrative driver of a coordinated and concerted programme of implementation. The programme is overseen by the Committee on Scholarly Publications in South Africa.

#### ***Book study***

This study investigates the world of book publishing, in and from South Africa. ASSAf set up a consensus panel of experts in 2008. The report addresses issues relating to the production, use and evaluation of scholarly books in South Africa.

#### ***National Open Access Platform***

The Academy is leading the establishment of an open access platform for high-quality South African scholarly journals. The plan is supported and funded by the DST. The proposed platform will enable users worldwide to access a wide range of the top peer-reviewed South African academic journals in full on the Internet, at no cost. Publication of journals in open access format unlocks peer-reviewed scholarly works in their entirety to the end-user. The articles are in digital format, available online at no cost and free from most copyright and licensing restrictions. The project is inspired by a wide-reaching movement towards online journals, pioneered by the Scientific Electronic Library Online (SciELO) project, based in Brazil. This fully indexed platform has been successfully implemented in eight countries, mostly in Latin America, with others being in the developmental phases. SciELO South Africa will be the first site of this growing system on the African continent.

#### ***South African Journal of Science***

The *South African Journal of Science* (SAJS) serves a multidisciplinary readership. Articles are presented in a



style that is intelligible to specialists and non-specialists alike. Priority is given to papers that are likely to be of interest to a relatively broad readership. A new editorial mode was introduced with effect from 1 January 2009, comprising an editor-in-chief and 10 associate editors in specific disciplinary fields. The content of the journal has expanded to explicitly embrace all sciences, including the social sciences and humanities. The **SAJS** will also be used as a pilot journal in the implementation of the open access platform to be launched as part of the Scholarly Publishing Programme.

## **Quest**

**Quest: Science for South Africa** is a full-colour, quarterly, popular science magazine directed at a target audience comprising learners, educators and the general public. It aims to present the country's foremost scientific work in an accessible form. **Quest** is widely distributed to public high schools with science departments and at national science events such as SciFest Africa, science Olympiads, National Science, Engineering and Technology Week, and the National Science and Technology Forum (NSTF) Awards functions. The magazine is also available to the general public through retail sales in bookstores and by subscription. A new part-time editor for **Quest** was appointed in August 2008.

Highlights of the past year included an increased print run of 25 000 per issue to increase distribution to schools, marketing at youth science events (SciFest Africa and National Science Week), distribution at the NSTF Awards ceremony to top achievers in the 2007 Grade 12 examinations, the appointment of a new editor, and successfully internalising the business management of **Quest** in ASSAf.

## **Communication and publications**

### **Marketing**

ASSAf prepared and printed a marketing brochure that was distributed at the ASADI meeting in London in

November 2008 in collaboration with the US National Academies of Science. The ASSAf quarterly newsletter, **Science for Society**, was published and four were disseminated to members and stakeholders.

### **Statements**

The Academy printed and disseminated two ASSAf statements, i.e. **Teaching evolution in South African schools** and **Xenophobic attacks**, as well as two joint G8+5 academies statements, **Global health** and **Climate change adaptation** and **The transition to a low carbon society** in June 2008.

### **Youth interaction**

Youth interactions took place at three national science events and **Quest: Science of South Africa** was promoted and distributed. Awareness of the Year of Astronomy was raised through a special edition of **Quest** and exhibition banners at SciFest in March 2009. Winners of the NSTF Education Recognition Programme (which recognises top scholars, winners of science Olympiads, and Dinaledi school principals) each received a one-year gift subscription to **Quest**.

### **Raising ASSAf's profile**

Universities are the major source of Academy members. An important aspect of the communication strategy has been to develop stronger links with universities and to increase awareness of ASSAf activities and publications. The objective is to enhance the reputation of ASSAf to encourage membership nominations from the country's best scholars and to establish the Academy as a credible source of policy advice. Members are the core asset of the Academy and give of their time and expertise voluntarily. There are currently 315 members (24% of which are female and 29% black). Twenty-one new members were elected during this year.

### External funding

There has been progress in diversifying sources of income, a key imperative as the funding from the US National Academies draws to a close. Project-based funding has been secured and a generous donation from the Oppenheimer Memorial Trust has enabled ASSAf to start an endowment fund. The Academy has been successful in obtaining project-related funding from a variety of funders for evidence-based studies.

### Internal strengthening and consolidation

Significant progress has been made during the past year in establishing a well-functioning management team and professional secretariat. Job descriptions for all ASSAf posts were revised and posts were evaluated by external consultants to benchmark salaries. ASSAf has experienced considerable growth in the number of secretariat staff over the year, and the staff complement is currently stable.

## TSHUMISANO TRUST



### Mandate

The mandate of the Tshumisano Trust is to improve the competitiveness of the innovation capacity of SMMEs in selected sectors through technological innovation and related skills development. The Technology Stations

Programme supports and maintains a sustainable system of competent providers of technology transfer and related needs-orientated services to SMMEs, while ensuring that universities of technology orient their graduates, and research and development towards the needs of SMMEs.

### SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

Details of some of the technology solutions, services and training provided during the year under review are given below. Many of these interventions resulted in contracts or improved business opportunities for the SMMEs involved.

The Reinforced and Moulded Plastics Technology Station at the Durban University of Technology designed an automated rolling device to process icing for cake decoration for a medium-sized business. The machine currently being built will allow for increased exports.

The Product Development Technology Station prototyped, tested and developed a number of potential SMME products, including ploughs (for the Agricultural Research Council), a fail-safe float valve and a water leakage detector.

The Automotive Components Technology Station assisted in a wide spectrum of testing, design and product/process development matters, which included designing a successful waste disposal skip. The Metal Casting Technology Station assisted with, among other things, the reverse engineering of functional ornamental components for an emerging company, and the Technology Station Electronics with a Scan Perimeter Beam and SMART vehicle harness. The Material Processing Technology Station helped a pottery SMME to redevelop its products and improve their value with the use of composite materials, increasing sales, and another small company to develop products for the disabled.

The AgriFood Processing Technology Station awarded 10 certifications to companies qualifying as suppliers,





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implemented technology transfer to companies, as well as technology transfer back into the teaching arena. Technology services offered during the year under review were at a rate of about five new contacts a week, with the increase due to the existence of the Agrifood Forum, a talk-shop and networking forum. The Limpopo Agro Food Technology Station tested and developed a kiwi juice blend for a kiwi farmer in Limpopo who wanted to increase his market supply.

The Technology Station in Chemicals developed and tested four hair care products in accordance with international standards, generated material data sheets for detergents and tested the products, and developed and carried out samples trials on skin care products that have been approved for exporting. The Downstream Chemicals Technology Station developed products for

preserved roses, and a citrus-based carrier for organic and mineral fertilizers.

The Textiles Technology Station supported the use of SMMEs by Puma to manufacture garments and goods in South Africa for the 2010 FIFA World Cup by providing assistance with the chemical analysis of materials to ensure compliance with OEM or export requirements.

The Institute for Advanced Tooling (IAT) in the Western Cape carried out a project involving the simulation and analysis of a CMR3 ring, and one (in collaboration with the IAT in Gauteng) on a wax mould for an aerospace part. The Gauteng IAT undertook two tooling projects (a wax injection die and an aluminium extrusion die) as skills and capacity building projects. In the Eastern Cape, the IAT developed a heat plug prototype tool and designed several kinds of hawkker stands.

## TECHNOLOGY INNOVATION AGENCY

### Mandate

The mandate of the Technology Innovation Agency (TIA), established under the Technology Innovation Agency Act, 2008, is to support the state in stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploiting technological innovations.

### SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

The appointment of the TIA Board and the CEO should be finalised in the 2009/10 financial year. The Technology Innovation Agency is listed as a Section 3A public entity. The TIA Board will initiate the appointment of the CEO.

The institutions and strategies that will be migrated to TIA in the 2009/10 financial year include the Innovation

Fund, Tshumisano Trust, the Advanced Manufacturing Technology Strategy, the Advanced Metal Initiative, the Hydrogen and Fuel Cells Strategy of South Africa, the Energy Security Grand Challenge, Health Innovation, the National Biotechnology Strategy, and European Union Sector Budget Support.



## **SOUTH AFRICAN NATIONAL SPACE AGENCY**

### **Mandate**

The mandate of the South African National Space Agency, established under the South African National Space Agency Act, 2008, is to promote the peaceful use of space; to support the creation of an environment conducive to industrial development in space technology;

to foster research in space science, communications, navigation and space physics; to advance scientific, engineering and technological competencies and capabilities through human capital development outreach programmes and infrastructure development; and to foster international cooperation in space-related activities.

### **SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR**

The South African National Space Agency is listed as a Section 3A public entity. It is expected to be fully operational by the end of the 2009/10 financial year. It will coordinate projects like the Square Kilometre Array, Southern African Large Telescope and South Africa's second indigenous satellite, Sumbandilasat.

The process of constituting the Board of the agency will be initiated during the 2009/10 financial year. The call for nominations has been made, and suitable candidates have been shortlisted. During the 2009/10 financial year, the Minister will finalise the appointment of the Board.



## SOUTH AFRICAN COUNCIL FOR NATURAL SCIENTIFIC PROFESSIONS

### Mandate

The mandate of the South African Council for Natural Scientific Professions (SACNASP), established under the National Scientific Professions Act, 2003, is to provide for the registration of professional, candidate and certified natural scientists and related matters.

SACNASP works with a variety of stakeholders such as government, industry, higher education and voluntary associations, striving to establish, direct, sustain and ensure

a high level of professionalism and ethical conduct that is internationally acceptable and in the broad interest of the scientific community.

SACNASP activities are not funded by DST, and it does not therefore submit a business plan to DST, although it must provide the Minister with an annual report for tabling in Parliament.

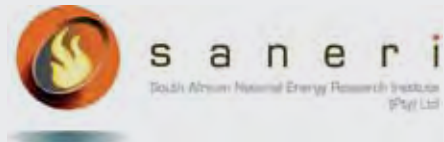
The following table shows a comparison of registered members for the past three years.

	March 2007	March 2008	March 2009
Certified natural scientists	78	103	108
Candidate natural scientists	145	158	174
Professional natural scientists	3 180	3 386	3 548
<b>TOTAL</b>	<b>3 403</b>	<b>3 647</b>	<b>3 830</b>





## SOUTH AFRICAN NATIONAL ENERGY RESEARCH INSTITUTE



### Mandate

The South African National Energy Research Institute (SANERI) became operational during 2006 through the joint efforts of the Department of Minerals and Energy and the DST. Following a Cabinet decision, SANERI was established under a ministerial directive. Its objectives are

to increase energy research and development in South Africa, increase human capacity in energy research, and transform the demographic profile of energy researchers in terms of gender and race to be more representative of South Africa's population.

### SOME OF THE HIGHLIGHTS FOR THE 2008/09 FINANCIAL YEAR

The Department of Minerals and Energy developed an Energy Act which established a new agency, the South African National Energy Development Institute (SANEDI). SANEDI will incorporate SANERI into its stable of institutions. From the 2009/10 financial year, the DST will no longer be responsible for the governance of SANERI, and its research mandate will no longer be cross-cutting, but sector specific, although the DST and the Department of Minerals and Energy will cooperate on developing the SANEDI business case.

#### Biofuels community project

SANERI initiated a successful research community project in the North West, from which the local community was able to benefit directly. Rural communities have traditionally not shared in the first economy, and in the past few years the situation has worsened, with municipal services collapsing in many parts of the province. The objectives of the project were skills development through training and the practical application and transfer of knowledge from North West University to the community. Laboratory research by postgraduate students is directly applied in the Community Biofuels

project, which centres on an integrated bioethanol and biodiesel production plant. Training in the different aspects of the project is continuous and specific to the group that will be performing a specific task in the project. The overall project comprises an agricultural leg, a bioethanol plant, a biodiesel plant, a small soap factory, a vegetable garden, a small glass factory, a small needlework factory, an animal feed processing leg, a cactus-processing leg, and a marketing and distribution leg.

#### The environmental impact of energy use by the automobile sector: A case of Johannesburg and Cape Town

The objectives of the project are to analyse the environmental effects of automobile energy use and supply in Johannesburg and Cape Town, to evaluate whether infrastructure planning and other measures would reduce negative environmental impacts, and to evaluate and make recommendations for policy makers on the environmental, social and economic costs of reducing impacts.

Both Johannesburg and Cape Town have developed strategies to monitor and address emissions from vehicles.



Most such strategies have not been implemented, and Cape Town seemed to be ahead of most cities in its efforts at building a sustainable transport system. Significant legal, regulatory and fiscal obstacles need to be dealt with at national level to facilitate implementation of some strategies, and more stakeholder interaction to share lessons would eliminate wasteful repetition of efforts. The problem of maintenance and scrapping old cars that tend to be the worst polluters is complex and needs a comprehensive solution.

The study made a contribution to the student capacity built at various levels (honours to PhD) and nurturing the students' interest in the subject of transport and the environment. A forum for stakeholder interaction has been established through two stakeholder workshops, which could also facilitate broader dialogue between municipalities and the government in respect of the various issues identified by the project. The Departments of Minerals and Energy, and Environmental Affairs and Tourism participated in the final policy-oriented workshop. The City of Tshwane Metropolitan Municipality joined the group and engaged enthusiastically in the policy dialogue.

### **Centre for Carbon Capture and Storage**

Throughout 2008, negotiations for a SANERI Centre for Carbon Capture and Storage were undertaken, and the centre was operationalised on 30 March 2009. The centre is a public-private/international partnership, and financed from local industry, SANERI, government and international sources. For five years the centre will operate under a charter; after which its success will be appraised, and continued work will be the subject of a new governing document.

### **Biofuels for sustainable rural development and the empowerment of women**

SANERI funded a research project whose main objective was to study local continental and international biofuels projects. The aim was to identify strategies that

would promote the participation of rural women, in particular, in the biofuels industry. The primary findings of this study, together with other projects from other countries, have been published in New York as a book, which has become a useful resource for policy makers and investors, particularly in view of the South African government's aim to use the biofuels industry to close the gap between the first and second economies.

### **The Green Transport Programme**

SANERI is hosting a Green Transport Programme on behalf of the DST, including the Hydrogen and Fuel Cell Technologies (HYSA) public awareness platform. SANERI's role is to facilitate the demonstration of vehicles and refuelling stations based on alternative, green fuels such as liquefied petroleum gas, compressed natural gas, biofuels (biodiesel and bioethanol), electricity (via batteries), fuel cells and hydrogen. The demonstration infrastructure should be in place for the 2010 Soccer World Cup. SANERI is responsible for the conceptualisation, development, project management, implementation and facilitation of the demonstration of alternative transport fuels and vehicles. Regarding the HYSA Public Awareness Platform, SANERI is responsible for the incubation of educational programmes such as an interdisciplinary, inter-university, systems-oriented master's degree programme to deal with hydrogen, fuel cells and alternatives in the energy and transport sectors. Another aim of the platform is to create awareness through newsletters and the real-life use of fuel cells.

To date, five areas have been identified for the 2010 and Beyond Green Transport Demonstration Programme. These areas, in order of priority, are the demonstration of buses and vehicles powered by compressed natural gas, the demonstration of electric vehicles, the demonstration of biofuel-powered vehicles, the demonstration of liquefied petroleum gas-powered vehicles, and the demonstration of vehicles powered by hydrogen. Feasibility studies have been conducted and detailed demonstration plans developed and costed. This

was done in collaboration and partnership with industry. A number of private companies have committed to co-funding demonstrations and associated demonstration infrastructure. Demonstration plans include a compressed natural gas demonstration station in Johannesburg, an electric charging station in Midrand, biodiesel refuelling demonstration stations in Pretoria and Cape Town, a liquid petroleum gas station in Johannesburg and Cape Town, and a mobile hydrogen station, possibly in Pretoria.



THE PUBLIC ENTITIES REPORTING TO  
THE DEPARTMENT OF SCIENCE AND TECHNOLOGY





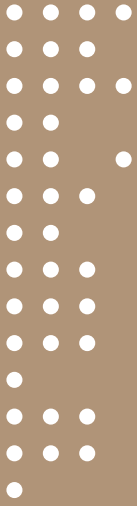


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# ANNUAL FINANCIAL STATEMENTS

FOR THE YEAR ENDED 31 MARCH 2009



*Report by the Accounting Officer to the Executive Authority and Parliament of the Republic of South Africa*

## **I. GENERAL REVIEW OF THE STATE OF FINANCIAL AFFAIRS**

### **I.1 Policy decisions and strategic issues facing the Department**

The international economic meltdown in the late 2008 was a tumultuous period – the devastating ripple effects of the developed countries' financial markets' meltdown were felt all over the world, particularly during this period. South Africa (SA), like all the other members of the global village, is also affected. To that effect, no one knows with certainty what the future of the state of the economic affairs holds.

Despite the gloomy economic situation, the advent of the implementation of the Ten-Year Innovation Plan (TYIP), spurred the Department to take bold steps promote commercialisation of research and development (R&D) outcomes. The purpose of promoting the commercialisation of R&D outcomes is to overcome the innovation chasm which could otherwise result in SA forfeiting the benefits derived from its own R&D outcomes. Furthermore, we believe that the commercialisation of R&D outcomes will lead to the improvement of the social and economic wellbeing of the people of SA.

Therefore, during the period under review, the DST's strategic operations deliberately focused mostly on the implementation of the grand challenges, which are the pillars of the TYIP. The grand challenges are:

- Farmer to Pharma;
- Global Change;
- Space Science;
- Human and Social Dynamics; and
- Energy Security.

The following are some of the vehicles the Department believes will be instrumental in furthering the goal of bridging the innovation chasm:

- The Technology Innovation Agency Act, 2008;
- The enactment of the Intellectual Property Rights from Publicly Financed Research and Development Act, 2008;
- The R&D tax incentive scheme;
- Creation of several centres of competence (CoCs).

The promulgation of the National Energy Act, which supersedes the Ministerial Directive, necessitated the change in governance of energy projects under the South African National Energy Research Institute (SANERI). The Act altered the Department's governance powers over SANERI, thus making the institute not accountable to the Department. Before the promulgation of the aforesaid Act, the



Department had been implementing most of its energy programmes through SANERI. In this regard the Department has migrated programmes that fall under its mandate according to the Cabinet-approved Strategic Management Model for Science and Technology.

## 1.2 Significant events

The following highlights some of the significant events that took place in the 2008/09 financial year. More details are available from specific programme performance sections:

### ***International SKA Forum- Cape Town, February 2009***

The forum focused on the scale of opportunities, benefits and challenges of building the world's biggest radio telescope, the Square Kilometer Array (SKA). Leading South African and international astronomers met with representatives from governments and funding agencies from around the world. South African industry and SKA partner countries from the African continent were also well represented.

### **Launch of the Federation of Engineering, Science and Technology Olympiads and Competitions**

In June 2008, the Minister launched the Federation of Engineering, Science and Technology Olympiads and Competitions (FESTOC). FESTOC is an umbrella body for the organisers of national science, technology and engineering competitions and Olympiads, and disseminates information about these, particularly to schools. It seeks to identify and nurture historically disadvantaged learners with talent and potential in the science and technology field. This Olympiad has a membership of seven SET Olympiads and competitions organisers.

### ***The Indigenous Knowledge Systems Expo***

For the first time, in August 2008, an Indigenous Knowledge Systems (IKS) Expo was launched. It brought together researchers and IKS knowledge-holders to discuss the future of the IKS in South Africa. There were seminars for a period of a week, which attracted approximately 2 000 participants, including four science councils.

### ***The INSITE 2008 Expo***

The International Science Innovation and Technology Exhibition (INSITE), was held alongside the International Association of Science Parks (IASP) 25<sup>th</sup> World Conference on Science and Technology Parks, from 14 to 17 September 2008 at the Sandton Convention Centre. The purpose of the Expo is to showcase innovative science and technology solutions to some of the world's most pressing social and economic challenges.

## 1.3 Major projects undertaken and completed

The land acquisition process by the SA government (through the NRF) for the MeerKAT site has been completed and usufruct agreements signed. The upgrade of the road to the MeerKAT site by the Northern Cape government has been completed.





In 2008, The DST collaborated with both the Centre for High Performance Computing and the South African National Research Network (SANReN) and embarked on a process to establish a South African Very Large Data Base (SA-VLDB). This will be a centre or a warehouse where storage, processing, analysis, curation and manipulation of large datasets will be undertaken. The SA-VLDB will form a third component of the cyberinfrastructure initiative of South Africa.

The Department, in partnership with the NRF, has successfully initiated a project to establish a High Resolution Transmission Electron Microscopy Centre at the Nelson Mandela Metropolitan University. Sasol and PBMR contributed a total of R11 million towards this project. This facility will be one of a kind in the continent.

The SANReN, established in 2005, achieved a significant milestone when the first four research infrastructure sites went live in Johannesburg on the main campus of the University of the Witwatersrand and two of the University of Johannesburg's satellite campuses (Bunting and Doornfontein). The four sites are on a shared 10 Gbps ring network and are connected to each other, as well as major gateway sites operated by Tertiary Education Network and hosted by Internet Solutions in Johannesburg.

In addition to the establishment of the National Equipment and National Nanotechnology Equipment programmes, R37 million was collectively spent by the DST and the NRF to address strategic infrastructure needs across the National System of Innovation.

#### **1.4 Programme structure**

The Department of Science and Technology's Vote comprises the following five programmes, which continue to carry out its key operational activities:

**Programme 1:** Administration

**Programme 2:** Research, Development and Innovation

**Programme 3:** International Cooperation and Resources

**Programme 4:** Human Capital and Knowledge Systems

**Programme 5:** Socio-Economic Partnerships

#### **1.5 Expenditure trends**

The total appropriation for the DST for the year ended 31 March, 2009 amounted to R3,722 billion. Total expenditure amounted to R3,703 billion, which represents 99,5 per cent of the appropriated funds, leaving unspent funds of R18,247 million. Transfers, including parliamentary grants to the public entities reporting to the DST, amounted to R3,439 billion or 93 per cent of the total spending, making up the major portion of the budget. A summary budget expenditure analysis of the DST spending is as shown on page 123:



### Summary budget expenditure analysis

	2008/09 R'000	2007/08 R'000
Amount voted	3 721 715	3 144 229
Actual expenditure	3 703 468	3 127 280
Unspent funds	18 247	16 949
<b>Economic classification</b>		
Current expenditure	260 265	211 000
Transfer payments	3 439 880	2 908 359
Payments for capital assets	3 323	7 921
<b>Total payments</b>	<b>3 703 468</b>	<b>3 127 280</b>

#### 1.6 Virement

The department has affected virements amounting to R41,737 million or 1 per cent of the total budget in the 2008/09 financial year. Socio-Economic Partnerships had the most unspent funds (R32,084 million), and the Administration Programme was the major recipient of the virements (R22,293 million). The unspent funds from the Socio-Economic Partnerships Programme were generated due to the review that needed to be conducted on the Information and Communication project; and the fact that the NRF decided to fund the initiation of the South African Research Chairs Initiative in humanities – which had been budgeted for by DST.

The unspent funds were mainly used to fund the additional compensation of employees that resulted from the cost-of-living adjustments that were greater than anticipated, the adjustments in salaries of senior management, the demarcation of electricity services to enable the transfer of the DST building to the Department of Public Works, and unfunded priority projects relating to human capital development, the International Year of Astronomy, South African CERN (Conseil Européen pour la Recherche Nucléaire - European Council for Nuclear Research), and other administrative expenditure.

## 2. SERVICE RENDERED BY THE DEPARTMENT

### 2.1 Core business of the Department

The DST's core business is to develop research and development policies in line with the National Research and Development Strategy, and to monitor the implementation of these. As indicated above, the DST has stepped up its business by supporting the commercialisation of research and development. As such DST does not provide any services to any institution or persons on a recoverable basis.





## 2.2 Inventory

The costing method used for inventory valuation by the DST is the weighted cost method. Inventory purchased during the financial year is disclosed at cost in the notes. For replenishment purposes, the DST Supply Chain Management (SCM) uses the analytical technique for SCM provisioning that is part of LOGIS. This system assists the DST to maintain and manage inventory at the lowest levels. As the DST inventory is not used for reselling, low levels of inventory are ideal for departmental operations, since no cash is locked up in illiquid assets. Incidences of obsolescence are rare, because the inventory is not held for long periods and losses are not material.

## 3. CAPACITY CONSTRAINTS

The Programme: Human Capital and Knowledge Systems experienced attrition in its senior management cohort. The Human Resource Unit is working to alleviate the situation. So far, with the tireless assistance of all the employees in this programme, significant projects have not been compromised.

A new Deputy Director-General: Corporate Services and Governance joined the Department in January 2009. His assumption of duty alleviated some of the constraints that were experienced in corporate services for a long period.

## 4. UTILISATION OF DONOR FUNDING

The Department received official development assistance from Canada, the European Union (EU), Finland, France, Germany and Japan. Below is a brief summary of the activities and financial assistance received from the aforesaid countries:

### ***Donor funding received in cash:***

- **Canada**

The Canadian government has given financial assistance amounting to R1,7 million for the proposed initiative, Epidemiological Modelling and Analysis. The funds are utilised by the South African Centre of Excellence in Epidemiological Modelling and Analysis. The project aims to develop, in partnership with Statistics Canada and the World Health Organization, innovative quantitative methods to support a more integrated, evidence-based national response to the epidemic of HIV/Aids (and major related diseases such as TB) in that country. The project was initiated in November 2008 and the first report was due by the end of April 2009.

- **European Union-Sector Budget Support Programme**

The EU has allocated a total of €30 million to support the Department's poverty alleviation initiatives over a period of three years. This allocation will see the Department supporting the utilisation of scientific innovation to provide sustainable water service delivery in rural areas, and the utilisation of ICT to develop and empower rural communities through employment creation and human capacity development, among





other things. The first disbursement of R128 million was received in December 2008 and R7,09 million was withdrawn for the project during the 2008/09 financial year, with resultant expenditure of R48 000. The process of identifying and approving projects is underway.

- **Finland**

**Cooperation Framework on Innovation Systems between Finland and South Africa (COFISA)**

The main objective of this programme is to facilitate the strengthening of national coordination of the South African National System of Innovation by supporting the development of provincial and local systems of innovation, especially in the Eastern Cape, Gauteng and the Western Cape. The Finnish contribution to this programme is R8,1 million for the 2008/09 financial year:

***The Knowledge Partnership on Information and Communication Technology (SAFIPA)***

SAFIPA aims to narrow the digital divide by introducing interventions that will help South Africa become an inclusive knowledge society with a strong ICT brand reflecting research excellence and demonstrating improvements in quality of life and economic competitiveness. The Finnish contribution to this programme for the 2008/09 financial year is R8,4 million.

***Donor funding received in kind:***

***Technical assistance***

- **Japan**

Japan participated in the following initiatives through RICAD:

- The enactment of the Technology Innovation Agency Act, 2008;
- Productivity training to increase the employability level of science and technology graduates. Two training sessions were conducted resulting in 80 students being trained and two students being employed by the private sector participants in this programme;
- Science Centre Baseline Study to provide quality baseline data on what learning materials are available in science centres and recommend the possibilities of the standardisation of learning material;
- Logistical and administrative support for the RICAD technical assistant;
- Intellectual property management training in support of capacity development in South Africa; and
- Technical assistance for RICAD, science centres and for support for the bilateral partnership with Japan.

The total in-kind contribution of the above initiatives for the 2008/09 financial year amounted to approximately R5,9 million.



- **Germany**

Germany agreed to the placement of a German technical assistant at the DST for a period of two years beginning of the 2008/09 financial year to assist in improving the management of the bilateral relationship between the two countries. The total in-kind contribution from Germany is R449 000 per annum.

## 5. PUBLIC ENTITIES

The public entities that were funded by the Department in 2008/09 are as follows:

### ***Human Sciences Research Council (R157,8 million)***

The Human Sciences Research Council (HSRC) was established in terms of the Human Sciences Research Act, 1968. It supports development in South Africa and Africa by coordinating and conducting applied social science research projects. Its research structures and activities are aligned to South Africa's national development priorities, notably: poverty reduction through economic development, skills enhancement, job creation, the elimination of discrimination and inequalities, and effective service delivery. The HSRC is poised to play a key role in the implementation of the recently approved 10-year Innovation Plan – particularly in relation to the challenge of human and social dynamics.

### ***National Research Foundation (R686,9 million)***

The National Research Foundation (NRF) was established by the National Research Foundation Act, 1998. The objective of the foundation is to support and promote research through funding, human resource development, and the provision of the necessary research facilities for the creation of knowledge, innovation and development in all fields of science and technology – including indigenous knowledge. In addition to the agency function, it acts as a service provider for the Department of Environmental Affairs and Tourism for marine research, the Department of Trade and Industry for the Technology and Human Resources for Industry Programme, and the Department of Labour for the Scarce Skills Development Fund.

### ***Africa Institute of South Africa (R28,9 million)***

The Africa Institute of South Africa (AISA) is a statutory body established in terms of the Africa Institute of South Africa Act, 2001. The key role of AISA is to conduct research and support policy development; embark on training programmes; and participate in and maintain networks for peace, development and prosperity in Africa. Its primary focus is on political, socio-economic, international and development issues in contemporary Africa. It contributes to the goals of the National System Of Innovation through research programmes that impact on knowledge production and human resource development in African studies – a scarce resource in South Africa.

### ***Council for Scientific and Industrial Research (R545,8 million)***

The Council for Scientific and Industrial Research (CSIR) is governed by the Scientific Research Council Act, 1988. The objectives of the CSIR are to foster industrial and scientific developments in the national interest, through directed and particularly multidisciplinary research and technological innovation, either by itself or in cooperation with principals from the private or public sector.



**Tshumisano Trust (R36,6 million)**

Tshumisano Trust is a joint venture, funded by the Department of Science and Technology – with participation by the Department of Labour, universities and the Gesellschaft für Technische Zusammenarbeit (GTZ). The core business of Tshumisano Trust is to leverage skills and product development support within universities of technology so that technology stations can provide support to small and medium-sized businesses.

**Academy of Science of South Africa (R5,3 million)**

The Academy of Science of South Africa (ASSAf) was formally established in 2001 in terms of the Academy of Science of South Africa Act, 2001. ASSAf’s objectives are to promote common ground for scientific thinking across all disciplines; to encourage and promote innovative and independent scientific thinking; to promote the optimum development of the intellectual capacity of all people; and to link South Africa with scientific communities at the highest levels, and the African continent in particular. In addition, it investigates matters of public interest concerning science and manages the *South African Journal of Science*.

**6. ORGANISATIONS TO WHICH TRANSFER PAYMENTS WERE MADE**

Transfer	Amount	Amount
	2008/09	2007/08
	R'000	R'000
<b>Programme 1: Administration</b>		
Technology Top 100	2 280	2 417
Institution and Programme Support	649	996
	<b>2 929</b>	<b>3 413</b>
<b>Programme 2: Research, Development and Innovation</b>		
Innovation Fund	140 000	141 818
HIV/AIDS Prevention and Treatment Technologies	16 601	8 067
Space Science	44 346	37 591
Square Kilometer Array	289 760	105 511
International Centre for Genetic Engineering and Biotechnology	10 000	10 000
Hydrogen Strategy	85 930	30 576
Health Innovation	15 500	9 000
Biotechnology Strategy	177 507	161 722
Biofuels	5 000	4 500
South African National Energy Research Institute	44 268	42 000
<b>Total</b>	<b>828 912</b>	<b>550 785</b>
<b>Programme 3: International Cooperation and Resources</b>		
Global Science	56 449	32 461
<b>Total</b>	<b>56 449</b>	<b>32 461</b>



# REPORT OF THE ACCOUNTING OFFICER FOR THE YEAR ENDED 31 MARCH 2009

Transfer	Amount	
	2008/09	2007/08
	R'000	R'000
<b>Programme 4: Human Capital and Knowledge System</b>		
Human Capital Development	263 710	195 910
Frontier Science and Technology	144 450	103 500
Indigenous Knowledge Systems	4 770	4 200
Science and Youth	45 588	28 009
Science Themes	46 739	43 327
Research and Development Infrastructure	140 500	50 000
Academies	5 570	3 400
Learnerships	6 640	3 112
South African National Research Network	89 000	162 000
<b>Total</b>	<b>746 967</b>	<b>593 458</b>
<b>Programme 5: Socio-Economic Partnerships</b>		
Technology Planning and Diffusion	-	38 180
Advanced Manufacturing Technology Strategy	47 999	57 706
Public Assets	52 832	46 000
Information and Communication Technology	54 976	54 210
Technology for Poverty Alleviation	23 500	39 925
Technology for Sustainable Livelihoods	4 639	53 040
Research Information Management System	14 000	16 000
Resource-based industries	33 201	27 565
Global Change Science and Technology	16 999	-
Local Manufacturing Capacity	23 500	-
Local Systems of Innovation	6 450	-
Quality of Life Nuclear Technologies	5 000	-
<b>Total</b>	<b>283 096</b>	<b>331 992</b>

## 7. CORPORATE GOVERNANCE ARRANGEMENT MATTERS

### 7.1 Management/Fraud Prevention Policy

The management of the Department has continued to improve the work and processes developed and implemented in the previous financial year to strengthen the management of the detection and prevention of fraud. Risk assessment continued to take centre stage within the DST echelons; as a key performance indicator, the Director-General ensured that risk is a standing item on the Executive Committee (EXCO) agenda. A Risk Management employee has been hired to assist the EXCO to identify and manage risks. The Fraud Prevention Policy, together with the Whistle-blowing Policy, is in place. Like all government departments, the DST has transferred its whistle-blowing activities/fraud hotline to the Public Service Commission.



## 7.2 The DST's committees

The DST has implemented the Operations Committee (OPCO) and the Executive Committee (EXCO) at top management as accountability organs in order to monitor progress and chart the way forward. OPCO meets every fortnight to discuss operational issues and its decisions are ratified/adopted at EXCO level. This committee consists of the deputy directors-general, the CFO and other members of the DST, upon invitation by their respective managers.

The EXCO, on the other hand, focuses on strategic and governance issues. It also meets on a fortnightly basis. The EXCO is chaired by the Accounting Officer. In addition, this committee also adopts/ratifies decisions taken by OPCO.

## 7.3 Management process to minimise conflicts of interest

As with the Management/Fraud Prevention Policy above, the Department is continually ensuring that the following management processes are implemented to minimise conflicts of interest:

- All senior managers (i.e. Senior Management Services (SMS) members) are required to complete a disclosure of information form on appointment; and
- All members of the Departmental Bid Adjudication Committee and the Bid Evaluation Committee are required to complete a declaration of interest form prior to the adjudication and evaluation of the bid, respectively.

## 7.4 Audit and Risk Management Committee

In order to comply with the PFMA and Treasury Regulations, the Department has an Audit Committee that meets at least three times in a year. The Audit Committee is chaired by Mr V Magan. The other members are Dr PM Mjwara, Mr L Kaplan and Mr M Mohohlo.

## 8. NEW/PROPOSED ACTIVITIES

The Technology Innovation Agency Act was enacted in the 2008/09 financial year and National Treasury subsequently listed TIA in the same year. It is envisioned that TIA will be established towards the latter part of the 2009/10 financial year. In addition to the establishment of the TIA, there is also a chance that the National Space Agency could be established.

## 9. ASSET MANAGEMENT

Asset policies and procedures are in place. The Department completed the minor assets register as required by the National Treasury. Verification of assets is conducted twice a year to ensure accountability and proper management of the DST's assets. Through collaboration between the Asset Management unit and the Security unit, stringent measures have been put in place to ensure that no one leaves DST premises with DST assets without authorisation.



## 10. EVENTS AFTER THE REPORTING DATE

The transfer of the DST's Head Office building to the Department of Public Works is still work in progress. The major condition (separation of municipal services) that will help the DST to conclude the transfer has been initiated. According to the contractors, the date of completion is envisioned to be around the end of October, and the transfer may be concluded by early 2010.

## 11. DISCONTINUED ACTIVITIES/ACTIVITIES TO BE DISCONTINUED

Due to the promulgation of the Energy Act, which supersedes the Ministerial Directive, beginning in the 2009/10 financial year, projects that were undertaken by SANERI, which according to the approved Cabinet Management model falls under the Department's mandate, are no longer going through SANERI.

## 12. PERFORMANCE INFORMATION

The DST has a Planning Cycle Framework, which ensures that strategic planning is systematised and synchronised with budgeting, reporting, monitoring and evaluation of DST deliverables. The framework provides for performance reporting to occur quarterly and annually. The quarterly reports are compiled and presented to the Executive Committee for approval and then a submission is sent to the Minister. The annual performance review is done according to Treasury Regulations. It follows an internal process of approval and is subsequently sent to the Auditor-General.

## 13. STANDING COMMITTEE ON PUBLIC ACCOUNTS (SCOPA) RESOLUTIONS

No issues were raised by SCOPA regarding the Department.

## 14. PRIOR MODIFICATIONS TO AUDIT REPORTS

The Auditor-General found no matters of significance with respect to the DST's administration. Housekeeping matters identified in the Management Letter were addressed by the DST.

## 15. EXEMPTIONS AND DEVIATIONS RECEIVED FROM THE NATIONAL TREASURY

No exemptions and deviations were identified by National Treasury.

## 16. OTHER

I would like to express my sincere appreciation to all the members of the DST staff and the Audit Committee for their tireless dedication in making sure that the Department's mandate is carried out.





## 17. APPROVAL

The Annual Financial Statements set out on pages 138 to 198 have been approved by the Accounting Officer:



**Dr PM Mjwara**

Accounting Officer



*Report of the Auditor-General to Parliament on the financial statements and performance information of Vote no 31: Department of Science and Technology for the year ended March 2009*

## REPORT ON THE FINANCIAL STATEMENTS

### Introduction

1. I have audited the accompanying financial statements of the Department of Science and Technology (DST), which comprise the appropriation statement, statement of financial position as at 31 March 2009, and the statement of financial performance, the statement of changes in net assets, the cash flow statement for the year then ended, a summary of significant accounting policies and explanatory notes, as set out on page 138 to 198.

### **The accounting officer's responsibility for the financial statements**

2. The accounting officer is responsible for the preparation of these financial statements in accordance with the modified cash basis of accounting determined by National Treasury, as set out in accounting policy note 1.1 to the financial statements and in the manner required by the Public Finance Management Act, 1999 (Act No. 1 of 1999) (PFMA) and for such internal control as the accounting officer determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### **The Auditor-General's responsibility**

3. As required by section 188 of the Constitution of the Republic of South Africa, 1996, read with section 4 of the Public Audit Act, 2004 (Act No. 25 of 2004) (PAA), my responsibility is to express an opinion on these financial statements based on my audit.
4. I conducted my audit in accordance with the International Standards on Auditing read with **General Notice 616 of 2008**, issued in **Government Gazette No. 31057 of 15 May 2008**. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.
5. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.
6. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

### **Opinion**

7. In my opinion, the financial statements present fairly, in all material respects, the financial position of the Department of Science and Technology as at 31 March 2009 and its financial performance and its cash flows for the year then



ended, in accordance with the modified cash basis of accounting determined by National Treasury, as set out in accounting policy note 1.1 to the financial statements and in the manner required by the PFMA.

**Basis of accounting**

8. I draw attention to the accounting policy note 1.1, which describes the basis of accounting. The department's policy is to prepare financial statements on the modified cash basis of accounting as determined by National Treasury.

**Governance framework**

9. The governance principles that impact the auditor's opinion on the financial statements are related to the responsibilities and practices exercised by the accounting officer and executive management and are reflected in the internal control deficiencies and other key governance requirements addressed below:

**Key governance responsibilities**

10. The PFMA tasks the accounting officer with a number of responsibilities concerning financial and risk management and internal control. Fundamental to achieving this is the implementation of key governance responsibilities, which I have assessed as follows:

No.	Matter	Y	N
<b>Clear trail of supporting documentation that is easily available and provided in a timely manner</b>			
1.	No significant difficulties were experienced during the audit concerning delays or the availability of requested information.	✓	
<b>Quality of financial statements and related management information</b>			
2.	The financial statements were not subject to any material amendments resulting from the audit.	✓	
3.	The annual report was submitted for consideration prior to the tabling of the auditor's report.	✓	
<b>Timeliness of financial statements and management information</b>			
4.	The Annual Financial Statements were submitted for auditing as per the legislated deadlines [section 40 of the PFMA].	✓	
<b>Availability of key officials during audit</b>			
5.	Key officials were available throughout the audit process.	✓	
<b>Development of, and compliance with, risk management, effective internal control and governance practices</b>			
6.	Audit committee		
	• The department had an audit committee in operation throughout the financial year.	✓	
	• The audit committee operates in accordance with approved, written terms of reference.	✓	
	• The audit committee substantially fulfilled its responsibilities for the year, as set out in section 77 of the PFMA and Treasury Regulation 3.1.10.	✓	
7.	Internal audit	✓	
	• The department had an internal audit function in operation throughout the financial year.	✓	
	• The internal audit function operates in terms of an approved internal audit plan.	✓	
	• The internal audit function substantially fulfilled its responsibilities for the year, as set out in Treasury Regulation 3.2/27.2.	✓	
8.	There are no significant deficiencies in the design and implementation of internal control in respect of financial and risk management.	✓	



No.	Matter	Y	N
9.	There are no significant deficiencies in the design and implementation of internal control in respect of compliance with applicable laws and regulations.	✓	
10.	The information systems were appropriate to facilitate the preparation of the financial statements.	✓	
11.	A risk assessment was conducted on a regular basis and a risk management strategy, which includes a fraud prevention plan, is documented and used as set out in Treasury Regulation 3.2/27.2.	✓	
12.	Delegations of responsibility are in place, as set out in section 44 of the PFMA.	✓	
<b>Follow-up of audit findings</b>			
13.	The prior year audit findings have been substantially addressed.	✓	
<b>Issues relating to the reporting of performance information</b>			
14.	The information systems were appropriate to facilitate the preparation of a performance report that is accurate and complete.		✓
15.	Adequate control processes and procedures are designed and implemented to ensure the accuracy and completeness of reported performance information.		✓
16.	A strategic plan was prepared and approved for the financial year under review for purposes of monitoring the performance in relation to the budget and delivery by the Department of Science and Technology against its mandate, predetermined objectives, outputs, indicators and targets. Treasury Regulations 5.1, 5.2 and 6.1.	✓	
17.	There is a functioning performance management system and performance bonuses are only paid after proper assessment and approval by those charged with governance.	✓	

11. Inadequate information systems and control processes around performance information resulted in the reporting of incomplete and inaccurate information.

## REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

### **Report on performance information**

12. I have reviewed the performance information as set out on pages 16 to 83.

### **The accounting officer's responsibility for the performance information**

13. The accounting officer has additional responsibilities as required by section 40(3) (a) of the PFMA to ensure that the annual report and audited financial statements fairly present the performance against predetermined objectives of the department.

### **The Auditor-General's responsibility**

14. I conducted my engagement in accordance with section 13 of the PAA read with **General Notice 616 of 2008**, issued in **Government Gazette No. 31057 of 15 May 2008**.

15. In terms of the foregoing my engagement included performing procedures of an audit nature to obtain sufficient appropriate evidence about the performance information and related systems, processes and procedures. The procedures selected depend on the auditor's judgement.

16. I believe that the evidence I have obtained is sufficient and appropriate to provide a basis for the audit findings reported below.



**Findings (performance information)**

**Usefulness and reliability of reported performance information**

17. The following criteria were used to assess the usefulness and reliability of the information on the department's performance information with respect to the objectives in its corporate plan:

- Consistency: Has the department reported on its performance with regard to its objectives, indicators and targets in its approved corporate plan?
- Relevance: Is the performance information as reflected in the indicators and targets clearly linked to the predetermined objectives and mandate. Is this specific and measurable, and is the time period or deadline for delivery specified?

**The following audit findings relate to the above criteria:**

**Inconsistently reported performance information**

**The following inconsistencies between the corporate strategy and the annual performance report were noted:**

- The Department of Science and Technology has not reported consistently on the indicators and targets as contained in the corporate plan.
- The National Advisory Council on Innovation (NACI) subprogramme is included under programme 2 in the corporate plan and included under programme 1 in the performance information report.

**Reported performance information not relevant**

18. The targets with regard to Space Science Technology and Science Technology for Economic and Social Impact were not:

- specific in clearly identifying the nature and the required level of performance
- measurable in identifying the required performance
- time bound in specifying the time period.

**Appreciation**

The assistance rendered by the staff of the Department of Science and Technology during the audit is sincerely appreciated.

*Auditor-General*



**AUDITOR - GENERAL  
SOUTH AFRICA**

*Auditing to build public confidence*

Pretoria

31 July 2009





## **1. OVERVIEW**

We are pleased to present our report for the financial year ended 31 March 2009.

## **2. AUDIT COMMITTEE MEMBERS AND ATTENDANCE**

The Audit Committee consists of the members listed below and meets as often as it deems necessary as per the approved terms of reference.

During the period under review, five meetings were held.

Name of the member	Position	Date appointed	Number of meetings attended
Viren Magan	Chairperson	September 2006	5 out of 5
Dr P Mjwara	Ex Officio member (Accounting Officer)	June 2006	5 out of 5
Leon Kaplan	Member	September 2006	5 out of 5
Mike Mohohlo	Member	August 2008	2 out of 2
Lesibana Ledwaba	Member (resigned in May 2008)	September 2006	-

## **3. AUDIT COMMITTEE RESPONSIBILITY**

The Audit Committee reports that it has complied with its responsibilities arising from section 38(1) (a) of the Public Finance Management Act, and Treasury Regulation 3.1.13. The Audit Committee also reports that it has adopted appropriate formal terms of reference as its Audit Committee Charter; has regulated its affairs in compliance with its charter and has discharged its responsibilities as contained therein.

## **4. THE EFFECTIVENESS OF INTERNAL CONTROL**

In line with the PFMA, Internal Audit provides the Audit Committee and management with assurance that the internal controls are appropriate and effective. This is achieved by means of the risk management process, as well as the identification of corrective actions and suggested enhancements to the controls and processes.

The Audit Committee is satisfied that the internal audit function, which is further assisted in terms of a co-sourced arrangement with an external service provider, operates efficiently and effectively.

## **5. GOVERNANCE**

### **5.1 Risk Management**

An updated formal risk assessment was undertaken by the department for the year ending 31 March 2009. Consequently, Internal Audit used this data to prepare the three-year rolling strategic plan and the annual operating audit plan. The committee monitored the significant risks faced by the Department and is satisfied that these risks were reduced to an acceptable level. The Department implements a risk management strategy, which includes a fraud prevention plan.





## **6. SUBMISSION OF IN-YEAR MANAGEMENT AND MONTHLY/ QUARTERLY REPORTS IN TERMS OF THE PUBLIC FINANCE MANAGEMENT ACT AND THE DIVISION OF REVENUE ACT**

The Audit Committee is satisfied with the content and quality of monthly and quarterly reports prepared and issued by the Accounting Officer and the Department during the year under review.

## **7. EVALUATION OF FINANCIAL STATEMENTS**

The Audit Committee has:

- reviewed and discussed the audited Annual Financial Statements to be included in the annual report with the Auditor-General and the Accounting Officer;
- reviewed the Auditor-General's management letter and management's response thereto;
- reviewed changes in accounting policies and practices; and
- reviewed significant adjustments resulting from the audit.

The Audit Committee concurs with and accepts the Auditor-General's conclusions on the Annual Financial Statements and is of the opinion that the audited Annual Financial Statements be accepted and read together with the report of the Auditor-General.

## **8. APPRECIATION**

The committee expresses its sincere appreciation to the Accounting Officer, senior management team and the Auditor-General for their contributions.



**Mr V Magan**

*Chairperson of the Audit Committee*

Date: 14 July 2009



# APPROPRIATION STATEMENT FOR THE YEAR ENDED 31 MARCH 2009

Appropriation per programme									
2008/09								2007/08	
APPROPRIATION STATEMENT	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>1. Administration</b>	<b>105,600</b>	<b>-</b>	<b>22,293</b>	<b>127,893</b>	<b>123,840</b>	<b>4,053</b>	<b>96.8%</b>	<b>114,448</b>	<b>113,390</b>
Current payment	100,715	-	21,654	122,369	118,800	3,569	97.1%	103,482	103,185
Transfers and subsidies	3,447	-	(271)	3,176	2,929	247	92.2%	4,188	3,429
Payment for capital assets	1,438	-	910	2,348	2,111	237	89.9%	6,778	6,776
<b>2. Research, Development and Innovation</b>	<b>873,002</b>	<b>-</b>	<b>(5,795)</b>	<b>867,207</b>	<b>864,535</b>	<b>2,672</b>	<b>99.7%</b>	<b>538,001</b>	<b>531,444</b>
Current payment	44,417	-	(7,795)	36,622	35,045	1,577	95.7%	22,345	21,682
Transfers and subsidies	828,350	-	1,980	830,330	829,261	1,069	99.9%	515,193	509,305
Payment for capital assets	235	-	20	255	229	26	89.8%	463	457
<b>3. International Cooperation and Resources</b>	<b>130,838</b>	<b>-</b>	<b>11,029</b>	<b>141,867</b>	<b>140,509</b>	<b>1,358</b>	<b>99.0%</b>	<b>99,739</b>	<b>99,433</b>
Current payment	43,528	-	10,826	54,354	53,090	1,264	97.7%	40,446	40,134
Transfers and subsidies	87,156	-	(171)	86,985	86,913	72	99.9%	59,004	59,014
Payment for capital assets	154	-	374	528	506	22	95.8%	289	285
<b>4. Human Capital and Knowledge Systems</b>	<b>1,452,385</b>	<b>-</b>	<b>4,557</b>	<b>1,456,942</b>	<b>1,455,009</b>	<b>1,933</b>	<b>99.9%</b>	<b>1,275,600</b>	<b>1,272,583</b>
Current payment	23,887	-	2,215	26,102	24,407	1,695	93.5%	21,697	21,352
Transfers and subsidies	1,428,344	-	2,257	1,430,601	1,430,386	215	100.0%	1,253,838	1,251,168



Appropriation per programme									
2008/09								2007/08	
APPROPRIATION STATEMENT	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Payment for capital assets	154	-	85	239	216	23	90.4%	65	63

<b>5. Socio-Economic Partnerships</b>	<b>1,159,890</b>	<b>-</b>	<b>(32,084)</b>	<b>1,127,806</b>	<b>1,119,575</b>	<b>8,231</b>	<b>99.3%</b>	<b>1,116,441</b>	<b>1,110,430</b>
Current payment	30,305	-	1,291	31,596	28,923	2,673	91.5%	24,958	24,647
Transfers and subsidies	1,129,431	-	(33,500)	1,095,931	1,090,391	5,540	99.5%	1,091,140	1,085,443
Payment for capital assets	154	-	125	279	261	18	93.5%	343	340
<b>Subtotal</b>	<b>3,721,715</b>	<b>-</b>	<b>-</b>	<b>3,721,715</b>	<b>3,703,468</b>	<b>18,247</b>	<b>99.5%</b>	<b>3,144,229</b>	<b>3,127,280</b>

**Statutory Appropriation**

Current payment

Transfers and subsidies

Payment for capital assets

**TOTAL 3,721,715 - - 3,721,715 3,703,468 18,247 99.5% 3,144,229 3,127,280**

**TOTAL (brought forward)**

**Reconciliation with Statement of Financial Performance**

**ADD**

Departmental receipts

333

219

Direct Exchequer receipts

-

-

Aid assistance

25,298

-

**Actual amounts per Statement of Financial Performance (Total Revenue)**

**3,747,346**

**3,144,448**

**ADD**

Aid assistance

**18,125**

**-**



# APPROPRIATION STATEMENT FOR THE YEAR ENDED 31 MARCH 2009

Appropriation per programme									
2008/09								2007/08	
APPROPRIATION STATEMENT	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Direct Exchequer payments					-				-
Prior year unauthorised expenditure approved without funding					-				-
<b>Actual amounts per Statement of Financial Performance (Total Expenditure)</b>					<b>3,721,593</b>				<b>3,127,280</b>

Appropriation per economic classification									
2008/09								2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>Current payments</b>	<b>242,852</b>	<b>-</b>	<b>28,191</b>	<b>271,043</b>	<b>260,265</b>	<b>10,778</b>	<b>96.0%</b>	<b>212,928</b>	<b>211,000</b>
Compensation of employees	135,889	-	14,451	150,340	144,869	5,471	96.4%	104,111	104,075
Goods and services	106,963	-	13,665	120,628	115,321	5,307	95.6%	108,735	106,843
Interest and rent on land	-	-	-	-	-	-	-	-	-
Financial transactions in assets and liabilities	-	-	75	75	75	-	100%	82	82
<b>Transfers and subsidies</b>	<b>3,476,728</b>	<b>-</b>	<b>(29,705)</b>	<b>3,447,023</b>	<b>3,439,880</b>	<b>7,143</b>	<b>99.8%</b>	<b>2,923,363</b>	<b>2,908,359</b>
Provinces and municipalities	-	-	-	-	-	-	-	-	-
Departmental agencies and accounts	1,910,632	-	(38,976)	1,871,656	1,866,540	5,116	99.7%	1,524,795	1,516,928
Universities and technikons	18,309	-	51,143	69,452	69,452	-	100%	43,867	45,817



Appropriation per economic classification									
	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	879,070	-	196,135	1,075,205	1,075,099	106	99.9%	1,025,255	1,023,212
Non-profit institutions	668,302	-	(238,357)	429,945	428,439	1,506	99.6%	328,800	322,215
Households	-	-	-	-	-	-	-	-	-
Gifts and donations	415	-	350	765	350	415	45.8%	646	187
<b>Payments for capital assets</b>	<b>2,135</b>	<b>-</b>	<b>1,514</b>	<b>3,649</b>	<b>3,323</b>	<b>326</b>	<b>91.1%</b>	<b>7,938</b>	<b>7,921</b>
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-
Machinery and equipment	2,135	-	1,514	3,649	3,323	326	91.1%	7,938	7,921
Biological assets	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-
Land and subsoil assets	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>3,721,715</b>	<b>-</b>	<b>-</b>	<b>3,721,715</b>	<b>3,703,468</b>	<b>18,247</b>	<b>99.5%</b>	<b>3,144,229</b>	<b>3,127,280</b>



# DETAIL PER PROGRAMME FOR THE YEAR ENDED 31 MARCH 2009

## I. Administration

Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation R'000	Shifting of Funds R'000	Virement R'000	Final Appropriation R'000	Actual Expenditure R'000	Variance R'000	Expenditure as % of final appropriation %	Final Appropriation R'000	Actual Expenditure R'000
<b>I.1 Minister</b>	<b>1,009</b>	<b>-</b>	<b>600</b>	<b>1,609</b>	<b>1,584</b>	<b>25</b>	<b>98.4%</b>	<b>1,107</b>	<b>1,107</b>
Current payment	1,009	-	600	1,609	1,584	25	98.4%	1,107	1,107
Transfers and subsidies	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-
<b>I.2 Deputy Minister</b>	<b>820</b>	<b>-</b>	<b>530</b>	<b>1,350</b>	<b>1,306</b>	<b>44</b>	<b>96.7%</b>	<b>950</b>	<b>949</b>
Current payment	820	-	530	1,350	1,306	44	96.7%	950	949
Transfers and subsidies	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-
<b>I.3 Management</b>	<b>5,696</b>	<b>-</b>	<b>200</b>	<b>5,896</b>	<b>5,873</b>	<b>23</b>	<b>99.6%</b>	<b>5,499</b>	<b>5,499</b>
Current payment	5,696	-	200	5,896	5,873	23	99.6%	5,499	5,499
Transfers and subsidies	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-
<b>I.4 Corporate Services</b>	<b>90,242</b>	<b>-</b>	<b>21,088</b>	<b>111,330</b>	<b>110,193</b>	<b>1,137</b>	<b>99.0%</b>	<b>98,704</b>	<b>97,727</b>
Current payment	85,357	-	20,449	105,806	105,153	653	99.4%	87,831	87,615
Transfers and subsidies	3,447	-	(271)	3,176	2,929	247	92.2%	4,188	3,429
Payment for capital assets	1,438	-	910	2,348	2,111	237	89.9%	6,685	6,683





Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>1.5 Governance</b>	<b>4,686</b>	<b>-</b>	<b>(125)</b>	<b>4,561</b>	<b>3,445</b>	<b>1,116</b>	<b>75.5%</b>	<b>3,881</b>	<b>3,801</b>
Current payment	4,686	-	(125)	4,561	3,445	1,116	75.5%	3,788	3,708
Transfers and subsidies	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	93	93
<b>1.6 Property Management</b>	<b>3,147</b>	<b>-</b>	<b>-</b>	<b>3,147</b>	<b>1,439</b>	<b>1,708</b>	<b>45.7%</b>	<b>4,307</b>	<b>4,307</b>
Current payment	3,147	-	-	3,147	1,439	1,708	45.7%	4,307	4,307
Transfers and subsidies	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>105,600</b>	<b>-</b>	<b>22,293</b>	<b>127,893</b>	<b>123,840</b>	<b>4,053</b>	<b>96.8%</b>	<b>114,448</b>	<b>113,390</b>

Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>Current payments</b>	<b>100,715</b>	<b>-</b>	<b>21,654</b>	<b>122,369</b>	<b>118,800</b>	<b>3,569</b>	<b>97.1%</b>	<b>103,482</b>	<b>103,185</b>
Compensation of employees	59,098	-	(180)	58,918	57,147	1,771	97.0%	44,779	44,771
Goods and services	41,617	-	21,762	63,379	61,581	1,798	97.2%	58,621	58,332
Interest and rent on land	-	-	-	-	-	-	-	-	-
Financial	-	-	72	72	72	-	100.0%	82	82



## DETAIL PER PROGRAMME FOR THE YEAR ENDED 31 MARCH 2009

Economic classification	2008/09							2007/08	
	Adjusted Appropriation R'000	Shifting of Funds R'000	Virement R'000	Final Appropriation R'000	Actual Expenditure R'000	Variance R'000	Expenditure as % of final appropriation %	Final Appropriation R'000	Actual Expenditure R'000
<b>Transfers and subsidies to:</b>	<b>3,447</b>	<b>-</b>	<b>(271)</b>	<b>3,176</b>	<b>2,929</b>	<b>247</b>	<b>92.2%</b>	<b>4,188</b>	<b>3,429</b>
Provinces and municipalities	-	-	-	-	-	-	-	-	-
Departmental agencies and accounts	-	-	-	-	-	-	-	-	-
Universities of technology	-	-	49	49	49	-	100.0%	445	445
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	-	-	-	-	-	-	-	-	-
Non-profit institutions	3,235	-	(320)	2,915	2,880	35	98.8%	3,739	2,967
Households	-	-	-	-	-	-	-	-	-
Gifts and donations	212	-	-	212	-	212	-	4	17
<b>Payment for capital assets</b>	<b>1,438</b>	<b>-</b>	<b>910</b>	<b>2,348</b>	<b>2,111</b>	<b>237</b>	<b>89.9%</b>	<b>6,778</b>	<b>6,776</b>
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-
Machinery and equipment	1,438	-	910	2,348	2,111	237	89.9%	6,778	6,776
Biological assets	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-
Land and subsoil assets	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>105,600</b>	<b>-</b>	<b>22,293</b>	<b>127,893</b>	<b>123,840</b>	<b>4,053</b>	<b>96.8%</b>	<b>114,448</b>	<b>113,390</b>



## 2. Research, Development and Innovation

Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>2.1 Space Science</b>	<b>341,428</b>	<b>-</b>	<b>3,797</b>	<b>345,225</b>	<b>344,205</b>	<b>1,020</b>	<b>99.7%</b>	<b>294,972</b>	<b>296,157</b>
Current payment	7,332	-	2,770	10,102	10,051	51	99.5%	6,634	6,430
Transfers and subsidies	333,966	-	1,100	335,066	334,105	961	99.7%	288,131	289,521
Payment for capital assets	130	-	(73)	57	49	8	86.0%	207	206
<b>2.2 Hydrogen and Energy</b>	<b>292,686</b>	<b>-</b>	<b>(9,062)</b>	<b>283,624</b>	<b>283,528</b>	<b>96</b>	<b>100.0%</b>	<b>34,462</b>	<b>35,025</b>
Current payment	19,318	-	(10,970)	8,348	8,268	80	99.0%	4,494	4,380
Transfers and subsidies	273,326	-	1,880	275,206	275,198	8	100.0%	29,897	30,576
Payment for capital assets	42	-	28	70	62	8	88.6%	71	69
<b>2.3 Biotechnology and Health</b>	<b>229,402</b>	<b>-</b>	<b>(405)</b>	<b>228,997</b>	<b>228,448</b>	<b>549</b>	<b>99.8%</b>	<b>202,139</b>	<b>194,164</b>
Current payment	8,323	-	505	8,828	8,385	443	95.0%	5,505	5,255
Transfers and subsidies	221,058	-	(1,000)	220,058	219,958	100	100.0%	196,513	188,789
Payment for capital assets	21	-	90	111	105	6	94.6%	121	120
<b>2.4 National Advisory Council on Innovation</b>	<b>9,486</b>	<b>-</b>	<b>(125)</b>	<b>9,361</b>	<b>8,354</b>	<b>1,007</b>	<b>89.2%</b>	<b>6,428</b>	<b>6,098</b>
Current payment	9,444	-	(100)	9,344	8,341	1,003	89.3%	5,712	5,617
Transfers and subsidies	-	-	-	-	-	-	-	652	419
Payment for capital assets	42	-	(25)	17	13	4	76.5%	64	62
<b>Total</b>	<b>873,002</b>	<b>-</b>	<b>(5,795)</b>	<b>867,207</b>	<b>864,535</b>	<b>2,672</b>	<b>99.7%</b>	<b>538,001</b>	<b>531,444</b>



## DETAIL PER PROGRAMME FOR THE YEAR ENDED 31 MARCH 2009

Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>Current payments</b>	<b>100,715</b>	<b>-</b>	<b>21,654</b>	<b>122,369</b>	<b>118,800</b>	<b>3,569</b>	<b>97.1%</b>	<b>103,482</b>	<b>103,185</b>
Compensation of employees	15,478	-	3,400	18,878	18,393	485	97.4%	11,481	11,465
Goods and services	28,939	-	(11,196)	17,743	16,651	1,092	93.8%	10,864	10,217
Interest and rent on land	-	-	-	-	-	-	-	-	-
Financial transactions in assets and liabilities	-	-				-	100.0%	-	-
<b>Transfers and subsidies to:</b>	<b>3,447</b>	<b>-</b>	<b>(271)</b>	<b>3,176</b>	<b>2,929</b>	<b>247</b>	<b>92.2%</b>	<b>4,188</b>	<b>3,429</b>
Provinces and municipalities	-	-	-	-	-	-	-	-	-
Departmental agencies and accounts	375,365	-	83,161	458,526	458,526	-	100.0%	309,255	302,961
Universities of technology	10,100	-	44,048	54,148	54,148	-	100.0%	12,364	15,114
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	21,565	-	10,991	32,556	32,556	-	100.0%	48,727	46,684
Non-profit institutions	421,204	-	(136,570)	284,634	283,681	953	99.7%	144,828	144,425
Households	-	-	-	-	-	-	-	-	-
Gifts and donations	116	-	350	466	350	116	75.1%	19	121
<b>Payment for capital assets</b>	<b>1,438</b>	<b>-</b>	<b>910</b>	<b>2,348</b>	<b>2,111</b>	<b>237</b>	<b>89.9%</b>	<b>6,778</b>	<b>6,776</b>
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-
Machinery and equipment	235	-	20	255	229	26	89.8%	463	457
Biological assets	-	-	-	-	-	-	-	-	-



Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Software and other intangible assets	-	-	-	-	-	-	-	-	-
Land and subsoil assets	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>873,002</b>	<b>-</b>	<b>(5,795)</b>	<b>867,207</b>	<b>864,535</b>	<b>2,672</b>	<b>99.7%</b>	<b>538,001</b>	<b>531,444</b>

### 3. International Co-operation and Resources

Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>3.1 Multilaterals and Africa</b>	<b>59,443</b>	<b>-</b>	<b>2,663</b>	<b>62,106</b>	<b>61,380</b>	<b>726</b>	<b>98.8%</b>	<b>73,546</b>	<b>73,261</b>
Current payment	15,734	-	2,876	18,610	17,895	715	96.2%	14,379	14,120
Transfers and subsidies	43,667	-	(378)	43,289	43,289	-	100.0%	59,015	58,992
Payment for capital assets	42	-	165	207	196	11	94.7%	152	149
<b>3.2 International Resources</b>	<b>39,189</b>	<b>-</b>	<b>(1,626)</b>	<b>37,563</b>	<b>37,360</b>	<b>203</b>	<b>99.5%</b>	<b>10,062</b>	<b>10,048</b>
Current payment	10,804	-	2,950	13,754	13,594	160	98.8%	10,034	10,018
Transfers and subsidies	28,351	-	(4,715)	23,636	23,602	34	99.9%	-	3
Payment for capital assets	34	-	139	173	164	9	94.8%	28	27



## DETAIL PER PROGRAMME FOR THE YEAR ENDED 31 MARCH 2009

Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>3.3 Bilateral Cooperation</b>	<b>32,206</b>	<b>-</b>	<b>9,992</b>	<b>42,198</b>	<b>41,769</b>	<b>429</b>	<b>99.0%</b>	<b>16,131</b>	<b>16,124</b>
Current payment	16,990	-	5,000	21,990	21,601	389	98.2%	16,033	15,996
Transfers and subsidies	15,138	-	4,922	20,060	20,022	38	99.8%	(11)	19
Payment for capital assets	78	-	70	148	146	2	98.6%	109	109
<b>Total</b>	<b>130,838</b>	<b>-</b>	<b>11,029</b>	<b>141,867</b>	<b>140,509</b>	<b>1,358</b>	<b>99.0%</b>	<b>99,739</b>	<b>99,433</b>

Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>Current payments</b>	<b>100,715</b>	<b>-</b>	<b>21,654</b>	<b>122,369</b>	<b>118,800</b>	<b>3,569</b>	<b>97.1%</b>	<b>103,482</b>	<b>103,185</b>
Compensation of employees	25,206	-	6,000	31,206	30,393	813	97.4%	19,851	19,849
Goods and services	18,322	-	4,826	23,148	22,697	451	98.1%	20,595	20,285
Interest and rent on land	-	-	-	-	-	-	-	-	-
Financial transactions in assets and liabilities	-	-	-	-	-	-	-	-	-
<b>Transfers and subsidies to:</b>	<b>3,447</b>	<b>-</b>	<b>(271)</b>	<b>3,176</b>	<b>2,929</b>	<b>247</b>	<b>92.2%</b>	<b>4,188</b>	<b>3,429</b>
Provinces and municipalities	-	-	-	-	-	-	-	-	-
Departmental agencies and accounts	30,759	-	13,543	44,302	44,264	38	99.9%	27,349	27,349
Universities of technologies	1,409	-	1,354	2,763	2,763	-	100.0%	4,526	4,527





Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	21,127	-	13,217	34,344	34,344	-	100.0%	22,748	22,748
Non-profit institutions	33,832		(28,285)	5,547	5,542	5	99.9%	4,370	4,368
Households	-	-	-	-	-	-	-	-	-
Gifts and donations	29	-	-	29	-	29	-	11	22
<b>Payment for capital assets</b>	<b>1,438</b>	<b>-</b>	<b>910</b>	<b>2,348</b>	<b>2,111</b>	<b>237</b>	<b>89.9%</b>	<b>6,778</b>	<b>6,776</b>
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-
Machinery and equipment	154	-	374	528	506	22	95.8%	289	285
Biological assets	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-
Land and subsoil assets	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>130,838</b>	<b>-</b>	<b>11,029</b>	<b>141,867</b>	<b>140,509</b>	<b>1,358</b>	<b>99.0%</b>	<b>99,739</b>	<b>99,433</b>



#### 4. Human Capital and Knowledge Systems

Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>4.1 Human Capital and Science Platforms</b>	<b>1,060,726</b>	<b>-</b>	<b>3,332</b>	<b>1,064,058</b>	<b>1,063,569</b>	<b>489</b>	<b>100.0%</b>	<b>946,316</b>	<b>943,341</b>
Current payment	11,219	-	980	12,199	11,781	418	96.6%	12,123	11,820
Transfers and subsidies	1,049,468	-	2,257	1,051,725	1,051,666	59	100.0%	934,138	931,467
Payment for capital assets	39	-	95	134	122	12	91.0%	55	54
<b>4.2 Indigenous Knowledge Systems</b>	<b>11,889</b>	<b>-</b>	<b>870</b>	<b>12,759</b>	<b>12,121</b>	<b>638</b>	<b>95.0%</b>	<b>10,542</b>	<b>10,508</b>
Current payment	7,077	-	870	7,947	7,312	635	92.0%	6,332	6,299
Transfers and subsidies	4,770	-	-	4,770	4,770	-	100.0%	4,200	4,200
Payment for capital assets	42	-	-	42	39	3	92.9%	10	9
<b>4.3 Emerging Research Areas and Infrastructure</b>	<b>379,770</b>	<b>-</b>	<b>355</b>	<b>380,125</b>	<b>379,319</b>	<b>806</b>	<b>99.8%</b>	<b>318,742</b>	<b>318,734</b>
Current payment	5,591	-	365	5,956	5,314	642	89.2%	3,242	3,233
Transfers and subsidies	374,106	-	-	374,106	373,950	156	100.0%	315,500	315,501
Payment for capital assets	73	-	(10)	63	55	8	87.3%	-	-
<b>Total</b>	<b>1,452,385</b>	<b>-</b>	<b>4,557</b>	<b>1,456,942</b>	<b>1,455,009</b>	<b>1,933</b>	<b>99.9%</b>	<b>1,275,600</b>	<b>1,272,583</b>



Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>Current payments</b>	<b>100,715</b>	<b>-</b>	<b>21,654</b>	<b>122,369</b>	<b>118,800</b>	<b>3,569</b>	<b>97.1%</b>	<b>103,482</b>	<b>103,185</b>
Compensation of employees	16,002	-	2,300	18,302	16,963	1,339	92.7%	11,878	11,869
Goods and services	7,885	-	(87)	7,798	7,442	356	95.4%	9,819	9,483
Interest and rent on land	-	-	-	-	-	-	-	-	-
Financial transactions in assets and liabilities	-	-	2	2	2	-	100.0%	-	-
<b>Transfers and subsidies to:</b>	<b>3,447</b>	<b>-</b>	<b>(271)</b>	<b>3,176</b>	<b>2,929</b>	<b>247</b>	<b>92.2%</b>	<b>4,188</b>	<b>3,429</b>
Provinces and municipalities	-	-	-	-	-	-	-	-	-
Departmental agencies and accounts	1,105,775	-	(15,686)	1,090,089	1,090,088	1	100.0%	936,104	936,105
Universities of technology	3,300	-	2,462	5,762	5,762	-	100.0%	8,771	7,970
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	229,030	-	33,184	262,214	262,108	106	100.0%	259,852	259,852
Non-profit institutions	90,181	-	(17,703)	72,478	72,428	50	99.9%	48,610	47,230
Households	-	-	-	-	-	-	-	-	-
Gifts and donations	58	-	-	58	-	58	100.0%	501	11
<b>Payment for capital assets</b>	<b>1,438</b>	<b>-</b>	<b>910</b>	<b>2,348</b>	<b>2,111</b>	<b>237</b>	<b>89.9%</b>	<b>6,778</b>	<b>6,776</b>
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-
Machinery and equipment	154	-	85	239	216	23	90.4%	65	63



## DETAIL PER PROGRAMME FOR THE YEAR ENDED 31 MARCH 2009

Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Biological assets	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-
Land and subsoil assets	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>1,452,385</b>	<b>-</b>	<b>4,557</b>	<b>1,456,942</b>	<b>1,455,009</b>	<b>1,933</b>	<b>99.9%</b>	<b>1,275,600</b>	<b>1,272,583</b>

### 5. Socio-Economic Partnerships

Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000

#### 5.1 Science and Technology for Economic Impact

<b>865,249</b>	<b>-</b>	<b>(15,000)</b>	<b>850,249</b>	<b>848,287</b>	<b>1,962</b>	<b>99.8%</b>	<b>857,096</b>	<b>851,508</b>
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Current payment	17,428	-	(45)	17,383	15,948	1,435	91.7%	14,857	14,832
Transfers and subsidies	847,765	-	(15,000)	832,765	832,245	520	99.9%	842,076	836,513
Payment for capital assets	56	-	45	101	94	7	93.1%	163	163

#### 5.2 Science and Technology for Social Impact

<b>271,920</b>	<b>-</b>	<b>(18,515)</b>	<b>253,405</b>	<b>247,594</b>	<b>5,811</b>	<b>97.7%</b>	<b>254,423</b>	<b>254,076</b>
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Current payment	7,215	-	-	7,215	6,427	788	89.1%	5,279	5,067
Transfers and subsidies	264,666	-	(18,500)	246,166	241,146	5,020	98.0%	249,064	248,930
Payment for capital assets	39	-	(15)	24	21	3	87.5%	80	79



Detail per sub-programme	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>5.3 Science and Technology Investment</b>	<b>22,721</b>	<b>-</b>	<b>1,431</b>	<b>24,152</b>	<b>23,694</b>	<b>458</b>	<b>98.1%</b>	<b>4,922</b>	<b>4,846</b>
Current payment	5,662	-	1,336	6,998	6,548	450	93.6%	4,822	4,748
Transfers and subsidies	17,000	-	-	17,000	17,000	-	100.0%	-	-
Payment for capital assets	59	-	95	154	146	8	94.8%	100	98
<b>Total</b>	<b>1,159,890</b>	<b>-</b>	<b>(32,084)</b>	<b>1,127,806</b>	<b>1,119,575</b>	<b>8,231</b>	<b>99.3%</b>	<b>1,116,441</b>	<b>1,110,430</b>

Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
<b>Current payments</b>	<b>100,715</b>	<b>-</b>	<b>21,654</b>	<b>122,369</b>	<b>118,800</b>	<b>3,569</b>	<b>97.1%</b>	<b>103,482</b>	<b>103,185</b>
Compensation of employees	20,105	-	2,931	23,036	21,973	1,063	95.4%	16,122	16,121
Goods and services	10,200	-	(1,640)	8,560	6,950	1,610	81.2%	8,836	8,526
Interest and rent on land	-	-	-	-	-	-	-	-	-
Financial transactions in assets and liabilities	-	-	-	-	-	-	-	-	-
<b>Transfers and subsidies to:</b>	<b>3,447</b>	<b>-</b>	<b>(271)</b>	<b>3,176</b>	<b>2,929</b>	<b>247</b>	<b>92.2%</b>	<b>4,188</b>	<b>3,429</b>
Provinces and municipalities	-	-	-	-	-	-	-	-	-
Departmental agencies and accounts	398,733	-	(119,994)	278,739	273,662	5,077	98.2%	252,087	250,513



## DETAIL PER PROGRAMME FOR THE YEAR ENDED 31 MARCH 2009

Economic classification	2008/09							2007/08	
	Adjusted Appropriation	Shifting of Funds	Virement	Final Appropriation	Actual Expenditure	Variance	Expenditure as % of final appropriation	Final Appropriation	Actual Expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Universities of technology	3,500	-	3,230	6,730	6,730	-	100.0%	17,761	17,761
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	607,348	-	138,743	746,091	746,091	-	100.0%	693,928	693,928
Non-profit institutions	119,850	-	(55,479)	64,371	63,908	463	99.3%	127,253	123,225
Households	-	-	-	-	-	-	-	-	-
Gifts and donations	-	-	-	-	-	-	-	111	16
<b>Payment for capital assets</b>	<b>1,438</b>	<b>-</b>	<b>910</b>	<b>2,348</b>	<b>2,111</b>	<b>237</b>	<b>89.9%</b>	<b>6,778</b>	<b>6,776</b>
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-
Machinery and equipment	154	-	125	279	261	18	93.5%	343	340
Biological assets	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-
Land and subsoil assets	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>1,159,890</b>	<b>-</b>	<b>(32,084)</b>	<b>1,127,806</b>	<b>1,119,575</b>	<b>8,231</b>	<b>99.3%</b>	<b>1,116,441</b>	<b>1,110,430</b>





### 1. Detail of transfers and subsidies as per Appropriation Act (after Virement):

Detail of these transactions can be viewed in note 7 (Transfers and subsidies) and Annexure I (A, G, H, I, K, L) to the Annual Financial Statements.

### 2. Detail of specifically and exclusively appropriated amounts voted (after Virement):

Detail of these transactions can be viewed in note 1 (Annual Appropriation) to the Annual Financial Statements.

### 3. Detail on financial transactions in assets and liabilities

Detail of these transactions per programme can be viewed in note 9 (Financial transactions in assets and liabilities) to the Annual Financial Statements.

### 4. Explanations of material variances from Amounts Voted (after Virement):

4.1 Per Programme	Final Appropriation	Actual Expenditure	Variance R'000	Variance as a % of Final Appropriation
I. Administration	127,893	123,840	4,053	3.2%

The underspending within Programme I: Administration is due to unforeseen staff turnover and the resultant administrative costs and the delay in the finalisation of the Alfresco project (Document Management System).

4.2 Per economic classification	Final Appropriation	Actual Expenditure	Variance	Variance as a % of Final Appropriation
	R'000	R'000	R'000	R'000

#### Current payments:

Compensation of employees	150,340	144,869	5,471	3.6%
Goods and services	120,628	115,321	5,307	4.3%

#### Transfers and subsidies:

Departmental agencies and accounts	1,871,656	1,866,540	5,116	0.2%
Universities and Technikons	69,452	69,452	-	-
Public corporations and private enterprises	1,075,205	1,075,099	106	-
Non-profit institutions	429,945	428,439	1,506	0.3%
Gifts and donations	765	350	415	54.2%

#### Payments for capital assets:

Machinery and equipment	3,649	3,323	326	8.9%
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# STATEMENT OF FINANCIAL PERFORMANCE

## FOR THE YEAR ENDED 31 MARCH 2009

PERFORMANCE	Note	2008/09	2007/08
		R'000	R'000
<b>REVENUE</b>			
Annual appropriation	1	3,721,715	3,144,229
Departmental revenue	2	333	219
Aid assistance	3	25,298	-
<b>TOTAL REVENUE</b>		<b>3,747,346</b>	<b>3,144,448</b>
<b>EXPENDITURE</b>			
<b>Current expenditure</b>			
Compensation of employees	4	144,869	104,075
Goods and services	5	115,321	106,843
Financial transactions in assets and liabilities	6	75	82
Aid assistance	3	48	-
<b>Total current expenditure</b>		<b>260,313</b>	<b>211,000</b>
<b>Transfers and subsidies</b>			
		<b>3,457,957</b>	<b>2,908,359</b>
Transfers and subsidies	7	3,439,880	2,908,359
Aid assistance	3	18,077	-
<b>Expenditure for capital assets</b>			
Tangible capital assets	8	3,323	7,921
<b>Total expenditure for capital assets</b>		<b>3,323</b>	<b>7,921</b>
<b>TOTAL EXPENDITURE</b>		<b>3,721,593</b>	<b>3,127,280</b>
<b>SURPLUS FOR THE YEAR</b>		<b>25,753</b>	<b>17,168</b>
<b>Reconciliation of Net Surplus for the year</b>			
Voted funds	12	18,247	16,949
Departmental revenue	13	333	219
Aid assistance	3	7,173	-
<b>SURPLUS FOR THE YEAR</b>		<b>25,753</b>	<b>17,168</b>



**STATEMENT OF FINANCIAL POSITION**  
**FOR THE YEAR ENDED 31 MARCH 2009**

**DST** ANNUAL REPORT  
**2008 | 2009**

POSITION	Note	2008/09	2007/08
		R'000	R'000
<b>ASSETS</b>			
<b>Current assets</b>		<b>25,554</b>	<b>17,038</b>
Cash and cash equivalents	9	24,168	16,151
Prepayments and advances	10	367	68
Receivables	11	1,019	819
<b>TOTAL ASSETS</b>		<b>25,554</b>	<b>17,038</b>
<b>LIABILITIES</b>			
<b>Current liabilities</b>		<b>25,461</b>	<b>16,973</b>
Voted funds to be surrendered to the Revenue Fund	12	18,247	16,948
Departmental revenue to be surrendered to the Revenue Fund	13	4	23
Payables	14	37	2
Aid assistance repayable	3	7,173	-
<b>TOTAL LIABILITIES</b>		<b>25,461</b>	<b>16,973</b>
<b>NET ASSETS</b>		<b>93</b>	<b>65</b>

	Note	2008/09	2007/08
		R'000	R'000
<b>Represented by:</b>			
Recoverable revenue		93	65
<b>TOTAL</b>		<b>93</b>	<b>65</b>



## STATEMENT OF CHANGES IN NET ASSETS FOR THE YEAR ENDED 31 MARCH 2009

NET ASSETS	Note	2008/09 R'000	2007/08 R'000
<b>Recoverable revenue</b>			
Opening balance		65	34
Transfers:		<b>28</b>	<b>31</b>
Debts recovered (included in departmental receipts)		(22)	(15)
Debts raised		50	46
<b>TOTAL</b>		<b>93</b>	<b>65</b>



CASH FLOW	Note	2008/09	2007/08
		R'000	R'000
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>			
Receipts		<b>3,747,346</b>	<b>3,144,337</b>
Annual appropriated funds received	1.1	3,721,715	3,144,228
Departmental revenue received	2	333	109
Aid assistance received	3	25,298	-
Net decrease in working capital		(464)	239
Surrendered to Revenue Fund		(17,300)	(4,301)
Current payments		(260,313)	(211,000)
Transfers and subsidies paid		(3,457,957)	(2,908,359)
<b>Net cash flow available from operating activities</b>	15	<b>11,312</b>	<b>20,916</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>			
Payments for capital assets	8	(3,323)	(7,921)
Proceeds from sale of capital assets	2	-	110
<b>Net cash flows from investing activities</b>		<b>(3,323)</b>	<b>(7,811)</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>			
Increase in net assets		28	31
<b>Net cash flows from financing activities</b>		<b>28</b>	<b>31</b>
Net increase in cash and cash equivalents		8,017	13,136
Cash and cash equivalents at the beginning of the period		16,151	3,015
<b>Cash and cash equivalents at end of period</b>	16	<b>24,168</b>	<b>16,151</b>



The financial statements have been prepared in accordance with the following policies, which have been applied consistently in all material aspects, unless otherwise indicated. However, where appropriate and meaningful, additional information has been disclosed to enhance the usefulness of the financial statements and to comply with the statutory requirements of the Public Finance Management Act, 1999, and the Treasury Regulations issued in terms of the Act and the Division of Revenue Act, 2006.

## **I. PRESENTATION OF THE FINANCIAL STATEMENTS**

### **1.1 Basis of preparation**

The financial statements have been prepared on a modified cash basis of accounting, except where stated otherwise. The modified cash basis constitutes the cash basis of accounting supplemented with additional disclosure items. Under the cash basis of accounting, transactions and other events are recognised when cash is received or paid.

### **1.2 Presentation currency**

All amounts have been presented in the currency of the South African Rand, (R) which is also the functional currency of the department.

### **1.3 Rounding**

Unless otherwise stated all financial figures have been rounded to the nearest one thousand Rand (R'000).

### **1.4 Comparative figures**

Prior period comparative information has been presented in the current year's financial statements. Where necessary figures included in the prior period financial statements have been reclassified to ensure that the format in which the information is presented is consistent with the format of the current year's financial statements.

### **1.5 Comparative figures – appropriation statement**

A comparison between actual amounts and final appropriation per major classification of expenditure is included in the appropriation statement.

## **2. REVENUE**

### **2.1 Appropriated funds**

Appropriated funds are recognised in the financial records on the date the appropriation becomes effective. Adjustments to the appropriated funds made in terms of the adjustments budget process are recognised in the financial records on the date the adjustments become effective.





Total appropriated funds are presented in the Statement of Financial Performance.

Unexpended appropriated funds are surrendered to the National Revenue Fund. Amounts owing to the National Revenue Fund at the end of the financial year are recognised in the Statement of Financial Position.

## 2.2 Statutory Appropriation

Statutory appropriations are recognised in the financial records on the date the appropriation becomes effective. Adjustments to the statutory appropriations made in terms of the adjustments budget process are recognised in the financial records on the date the adjustments become effective.

Total statutory appropriations are presented in the Statement of Financial Performance.

Unexpended statutory appropriations are surrendered to the National Revenue Fund. Amounts owing to the National Revenue Fund at the end of the financial year are recognised in the Statement of Financial Position.

## 2.3 Departmental revenue

All departmental revenue is paid into the National Revenue Fund when received, unless otherwise stated. Amounts owing to the National Revenue Fund at the end of the financial year are recognised in the Statement of Financial Position.

Amounts receivable at the reporting date are disclosed in the disclosure notes to the Annual Financial Statements.

### 2.3.1 Tax revenue

Tax revenue consists of all compulsory unrequited amounts collected by the Department in accordance with laws and or regulations (excluding fines, penalties and forfeits).

Tax receipts are recognised in the Statement of Financial Performance when received.

### 2.3.2 Sales of goods and services other than capital assets

The proceeds received from the sale of goods and/or the provision of services is recognised in the Statement of Financial Performance when the cash is received.

### 2.3.3 Fines, penalties and forfeits

Fines, penalties and forfeits are compulsory unrequited amounts which were imposed by a court or quasi-judicial body and collected by the department. Revenue arising from fines, penalties and forfeits is recognised in the Statement of Financial Performance when the cash is received.



#### **2.3.4 Interest, dividends and rent on land**

Interest, dividends and rent on land is recognised in the Statement of Financial Performance when the cash is received.

#### **2.3.5 Sale of capital assets**

The proceeds received on sale of capital assets are recognised in the Statement of Financial Performance when the cash is received.

#### **2.3.6 Financial transactions in assets and liabilities**

Repayments of loans and advances previously extended to employees and public corporations for policy purposes are recognised as revenue in the Statement of Financial Performance on receipt of the funds.

Cheques issued in previous accounting periods that expire before being banked are recognised as revenue in the Statement of Financial Performance when the cheque becomes stale. When the cheque is reissued the payment is made from Revenue.

Forex gains are recognised on payment of funds.

#### **2.3.7 Transfers received (including gifts, donations and sponsorships)**

All cash gifts, donations and sponsorships are paid into the National Revenue Fund and recorded as revenue in the Statement of Financial Performance when received. Amounts receivable at the reporting date are disclosed in the disclosure notes to the financial statements.

All in-kind gifts, donations and sponsorships are disclosed at fair value in an annexure to the financial statements.

### **2.4 Direct Exchequer receipts**

All direct exchequer receipts are recognised in the Statement of Financial Performance when the cash is received.

All direct exchequer payments are recognised in the Statement of Financial Performance when final authorisation for payment is effected on the system (by no later than 31 March of each year).

### **2.5 Aid assistance**

Local and foreign aid assistance is recognised as revenue when notification of the assistance is received from National Treasury or when the department directly receives the cash from the donor(s).

All in-kind local and foreign aid assistance are disclosed at fair value in the annexures to the Annual Financial Statements



The cash payments made during the year relating to local and foreign aid assistance projects are recognised as expenditure in the Statement of Financial Performance. The value of the assistance expensed prior to the receipt of the funds is recognised as a receivable in the Statement of Financial Position

Inappropriately expensed amounts using local and foreign aid assistance and any unutilised amounts are recognised as payables in the Statement of Financial Position.

All CARA funds received must be recorded as revenue when funds are received. The cash payments made during the year relating to CARA earmarked projects are recognised as current or capital expenditure in the Statement of Financial Performance.

Inappropriately expensed amounts using CARA funds and any unutilised amounts are recognised as payables in the Statement of Financial Position.

### **3. EXPENDITURE**

#### **3.1 Compensation of employees**

##### **3.1.1 Short-term employee benefits**

Salaries and wages comprise payments to employees (including leave entitlements, thirteenth cheques and performance bonuses). Salaries and wages are recognised as an expense in the Statement of Financial Performance when final authorisation for payment is effected on the system (by no later than 31 March of each year).

All other payments are classified as current expenses.

Short-term employee benefits that give rise to a present legal or constructive obligation are disclosed in the disclosure notes to the financial statements. These amounts are not recognised in the Statement of Financial Performance or Position.

##### **3.1.2 Post-retirement benefits**

The Department provides retirement benefits (pension benefits) for certain of its employees through a defined benefit plan for government employees. These benefits are funded by both employer and employee contributions.

Employer contributions (i.e. social contributions) to the fund are expensed when the final authorisation for payment to the fund is effected on the system (by no later than 31 March of each year). No provision is made for retirement benefits in the financial statements of the department. Any potential liabilities are disclosed in the financial statements of the National Revenue Fund and not in the financial statements of the employer department.

The department provides medical benefits for certain of its employees. Employer contributions to the medical funds are expensed when final authorisation for payment to the fund is effected on the system (by no later than 31 March of each year).



### 3.1.3 Termination benefits

Termination benefits such as severance packages are recognised as an expense in the Statement of Financial Performance as a transfer (to households) when the final authorisation for payment is effected on the system (by no later than 31 March of each year).

### 3.1.4 Other long-term employee benefits

Other long-term employee benefits (such as capped leave) are recognised as an expense in the Statement of Financial Performance as a transfer (to households) when the final authorisation for payment is effected on the system (by no later than 31 March of each year).

Long-term employee benefits that give rise to a present legal or constructive obligation are disclosed in the disclosure notes to the financial statements. These amounts are not recognised in the Statement of Financial Performance or Position.

## 3.2 Goods and services

Payments made for goods and/or services are recognised as an expense in the Statement of Financial Performance when the final authorisation for payment is effected on the system (by no later than 31 March of each year). The expense is classified as capital if the goods and services were used for a capital project or an asset of R5 000 or more is purchased. All assets costing less than R5 000 will also be reflected under goods and services.

## 3.3 Interest and rent on land

Interest and rental payments are recognised as an expense in the Statement of Financial Performance when the final authorisation for payment is effected on the system (by no later than 31 March of each year). This item excludes rental for the use of buildings or other fixed structures. If it is not possible to distinguish between payment for the use of land and the fixed structures on it, the whole amount should be recorded under goods and services.

## 3.4 Financial transactions in assets and liabilities

**Debts are written off** when identified as irrecoverable. Debts written-off are limited to the amount of savings and/or underspending of appropriated funds. The write-off occurs at year-end or when funds are available. No provision is made for irrecoverable amounts but amounts are disclosed as a disclosure note.

All **other losses** are recognised when authorisation has been granted for the recognition thereof.

## 3.5 Transfers and subsidies

Transfers and subsidies are recognised as an expense when the final authorisation for payment is effected on the system (by no later than 31 March of each year).



### **3.6 Unauthorised expenditure**

When discovered unauthorised expenditure is recognised as an asset in the statement of financial position until such time as the expenditure is either approved by the relevant authority, recovered from the responsible person or written off as irrecoverable in the Statement of Financial Performance.

Unauthorised expenditure approved with funding is recognised in the Statement of Financial Performance when the unauthorised expenditure is approved and the related funds are received. Where the amount is approved without funding it is recognised as expenditure, subject to availability of savings, in the Statement of Financial Performance on the date of approval.

### **3.7 Fruitless and wasteful expenditure**

Fruitless and wasteful expenditure is recognised as expenditure in the Statement of Financial Performance. If the expenditure is recoverable it is treated as an asset until it is recovered from the responsible person or written off as irrecoverable in the Statement of Financial Performance.

### **3.8 Irregular expenditure**

Irregular expenditure is recognised as expenditure in the Statement of Financial Performance. If the expenditure is not condoned by the relevant authority it is treated as an asset until it is recovered or written off as irrecoverable in the Statement of Financial Performance.

### **3.9 Expenditure for capital assets**

Payments made for capital assets are recognised as an expense in the Statement of Financial Performance when the final authorisation for payment is effected on the system (by no later than 31 March of each year).

## **4. ASSETS**

### **4.1 Cash and cash equivalents**

Cash and cash equivalents are carried in the Statement of Financial Position at cost.

For the purposes of the Cash Flow Statement, cash and cash equivalents comprise cash on hand, deposits held, other short-term highly liquid investments and bank overdrafts.

### **4.2 Other financial assets**

Other financial assets are carried in the Statement of Financial Position at cost.

### **4.3 Prepayments and advances**

Amounts prepaid or advanced are recognised in the Statement of Financial Position when the payments are made.



Pre-payments and advances outstanding at the end of the year are carried in the Statement of Financial Position at cost.

#### **4.4 Receivables**

Receivables included in the Statement of Financial Position arise from cash payments made that are recoverable from another party.

Receivables outstanding at year-end are carried in the Statement of Financial Position at cost plus any accrued interest.

#### **4.5 Investments**

Capitalised investments are shown at cost in the Statement of Financial Position. Any cash flows such as dividends received or proceeds from the sale of the investment are recognised in the Statement of Financial Performance when the cash is received.

Investments are tested for an impairment loss whenever events or changes in circumstances indicate that the investment may be impaired. Any loss is included in the disclosure notes.

#### **4.6 Loans**

Loans are recognised in the Statement of Financial Position at the nominal amount when cash is paid to the beneficiary. Loan balances are reduced when cash repayments are received from the beneficiary. Amounts that are potentially irrecoverable are included in the disclosure notes.

Loans that are outstanding at year-end are carried in the Statement of Financial Position at cost.

#### **4.7 Inventory**

Inventories purchased during the financial year are disclosed at cost in the notes.

#### **4.8 Capital assets**

##### **4.8.1 Movable assets**

A capital asset is recorded on receipt of the item at cost. Cost of an asset is defined as the total cost of acquisition. Where the cost cannot be determined accurately, the movable capital asset is stated at fair value. Where fair value cannot be determined, the capital asset is included in the asset register at R1.

Subsequent expenditure of a capital nature is recorded in the Statement of Financial Performance as "expenditure for capital asset" and is capitalised in the asset register of the department on completion of the project.

Repairs and maintenance is expensed as current "goods and services" in the Statement of Financial Performance.





#### 4.8.2 Immovable assets

A capital asset is recorded on receipt of the item at cost. Cost of an asset is defined as the total cost of acquisition. Where the cost cannot be determined accurately, the immovable capital asset is stated at R1 unless the fair value for the asset has been reliably estimated.

Work-in-progress of a capital nature is recorded in the Statement of Financial Performance as “expenditure for capital asset”. On completion, the total cost of the project is included in the asset register of the department that legally owns the asset or the national Department of Public Works.

Repairs and maintenance is expensed as current “goods and services” in the Statement of Financial Performance.

## 5. LIABILITIES

### 5.1 Voted funds to be surrendered to the Revenue Fund

Unexpended appropriated funds are surrendered to the National Revenue Fund. Amounts owing to the National Revenue Fund at the end of the financial year are recognised in the Statement of Financial Position.

### 5.2 Departmental revenue to be surrendered to the Revenue Fund

Amounts owing to the National Revenue Fund at the end of the financial year are recognised in the Statement of Financial Position at cost.

### 5.3 Direct Exchequer receipts to be surrendered to the Revenue Fund

All direct exchequer fund receipts are recognised in the Statement of Financial Performance when the cash is received.

Amounts received must be surrendered to the relevant revenue fund on receipt thereof. Any amount not surrendered at year end is reflected as a current payable in the Statement of Financial Position.

### 5.4 Bank overdraft

The bank overdraft is carried in the Statement of Financial Position at cost.

### 5.5 Payables

Recognised payables mainly comprise of amounts owing to other governmental entities. These payables are recognised at historical cost in the Statement of Financial Position.

### 5.6 Contingent liabilities

Contingent liabilities are included in the disclosure notes to the financial statements.



### **5.7 Commitments**

Commitments are not recognised in the Statement of Financial Position as a liability or as expenditure in the Statement of Financial Performance but are included in the disclosure notes.

### **5.8 Accruals**

Accruals are not recognised in the Statement of Financial Position as a liability or as expenditure in the Statement of Financial Performance but are included in the disclosure notes.

### **5.9 Employee benefits**

Short-term employee benefits that give rise to a present legal or constructive obligation are disclosed in the disclosure notes to the financial statements. These amounts are not recognised in the Statement of Financial Performance or the Statement of Financial Position.

### **5.10 Lease commitments**

#### **Finance leases**

Finance leases are not recognised as assets and liabilities in the statement of financial position. Finance lease payments are recognised as an expense in the statement of financial performance and are apportioned between the capital and the interest portions. The finance lease liability is disclosed in the disclosure notes to the financial statements.

#### **Operating leases**

Operating lease payments are recognised as an expense in the statement of financial performance. The operating lease commitments are disclosed in the disclosure notes to the financial statements.

## **6. RECEIVABLES FOR DEPARTMENTAL REVENUE**

Receivables for departmental revenue are disclosed in the disclosure notes to the Annual Financial Statements.

## **7. NET ASSETS**

### **7.1 Capitalisation reserve**

The capitalisation reserve comprises of financial assets and/or liabilities originating in a prior reporting period but which are recognised in the Statement of Financial Position for the first time in the current reporting period. Amounts are transferred to the National Revenue Fund on disposal, repayment or recovery of such amounts.



## **7.2 Recoverable revenue**

Amounts are recognised as recoverable revenue when a payment made in a previous financial year becomes recoverable from a debtor in the current financial year.

## **8. RELATED PARTY TRANSACTIONS**

Specific information with regards to related party transactions is included in the disclosure notes.

## **9. KEY MANAGEMENT PERSONNEL**

Compensation paid to key management personnel including their family members where relevant, is included in the disclosure notes.

## **10. PUBLIC PRIVATE PARTNERSHIPS**

A description of the PPP arrangement, the contract fees and current and capital expenditure relating to the PPP arrangement is included in the disclosure notes.



# NOTES TO THE ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2009

## I. ANNUAL APPROPRIATION

### I.1 Annual Appropriation

Included are funds appropriated in terms of the Appropriation Act (and the Adjustments Appropriation Act) for National Departments (Voted funds):

	Final appropriation	Actual funds received	Funds not requested/ not received	Appropriation received 2007/08
	R'000	R'000	R'000	R'000
Administration	127,893	127,893	-	114,447
Research, Development and Innovation	867,207	867,207	-	538,001
International Cooperation and Resources	141,867	141,867	-	99,739
Human Capital and Knowledge Systems	1,456,942	1,456,942	-	1,275,600
Socio-Economic Partnerships	1,127,806	1,127,806	-	1,116,441
<b>Total</b>	<b>3,721,715</b>	<b>3,721,715</b>	<b>-</b>	<b>3,144,228</b>

## 2. DEPARTMENTAL REVENUE

	Note	2008/09 R'000	2007/08 R'000
Sales of goods and services other than capital assets	2.1	26	24
Interest, dividends and rent on land	2.2	9	6
Sales of capital assets	2.3	-	110
Financial transactions in assets and liabilities	2.4	298	79
<b>Departmental revenue collected</b>		<b>333</b>	<b>219</b>

### 2.1 Sales of goods and services other than capital assets

	Note	2008/09 R'000	2007/08 R'000
Other sales	2	26	24
<b>Total</b>		<b>26</b>	<b>24</b>



## 2.2 Interest, dividends and rent on land

	Note 2	2008/09 R'000	2007/08 R'000
Interest		9	6
<b>Total</b>		<b>9</b>	<b>6</b>

## 2.3 Sale of capital assets

	Note 2	2008/09 R'000	2007/08 R'000
<b>Tangible capital assets</b>			
Machinery and equipment	24.2	-	110
<b>Total</b>		<b>-</b>	<b>110</b>

## 2.4 Financial transactions in assets and liabilities

	Note 2	2008/09 R'000	2007/08 R'000
Receivables		22	6
Other Receipts including Recoverable Revenue		276	73
<b>Total</b>		<b>298</b>	<b>79</b>

## 3. AID ASSISTANCE

### 3.1 Aid assistance received in cash from RDP

	Note	2008/09 R'000	2007/08 R'000
<b>Foreign</b>			
Opening Balance		-	-
Revenue		25,298	-
Expenditure		<b>(18,125)</b>	-
Current		(48)	-
Transfers		(18,077)	-
<b>Closing balance</b>		<b>7,173</b>	<b>-</b>
<b>Analysis of balance</b>			
Aid assistance repayable	Note	7,173	-
RDP			
<b>Closing balance</b>		<b>7,173</b>	<b>-</b>



# NOTES TO THE ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2009

## 4. COMPENSATION OF EMPLOYEES

### 4.1 Salaries and wages

	Note	2008/09 R'000	2007/08 R'000
Basic salary		87,054	68,126
Performance award		7,122	2,577
Service Based		707	247
Compensative/circumstantial		2,061	1,924
Periodic payments		149	536
Other non-pensionable allowances		33,689	19,744
<b>Total</b>		<b>130,782</b>	<b>93,154</b>

### 4.2 Social contributions

	Note	2008/09 R'000	2007/08 R'000
<b>Employer contributions</b>			
Pension		10,987	8,217
Medical		3,090	2,695
Bargaining council		10	9
<b>Total</b>		<b>14,087</b>	<b>10,921</b>
<b>Total compensation of employees</b>		<b>144,869</b>	<b>104,075</b>
Average number of employees		<b>342</b>	<b>313</b>

## 5. GOODS AND SERVICES

	Note	2008/09 R'000	2007/08 R'000
Administrative fees		619	1,223
Advertising		10,680	2,064
Assets less than R5,000	5.1	580	187
Bursaries (employees)		1,172	777
Catering		2,111	1,245
Communication		6,813	7,038
Computer services	5.2	3,227	2,244
Consultants, contractors and agency/outsourced services	5.3	28,573	34,173
Entertainment		1,216	940
Audit cost – external	5.4	1,613	781
Inventory	5.5	4,115	7,125
Maintenance, repairs and running costs		-	1,780





	Note	2008/09 R'000	2007/08 R'000
Operating leases		957	1,770
Owned and leasehold property expenditure	5.6	6,293	4,482
Travel and subsistence	5.7	38,207	31,665
Venues and facilities		2,209	4,032
Training and staff development		2,022	1,667
Other operating expenditure	5.8	4,914	3,650
<b>Total</b>		<b>115,321</b>	<b>106,843</b>

### 5.1 Assets less than R5,000

	Note 5	2008/09 R'000	2007/08 R'000
<b>Tangible assets</b>		<b>580</b>	<b>180</b>
Machinery and equipment		580	180
<b>Intangible assets</b>		<b>-</b>	<b>7</b>
<b>Total</b>		<b>580</b>	<b>187</b>

### 5.2 Computer services

	Note 5	2008/09 R'000	2007/08 R'000
SITA computer services		1,801	2,167
External computer service providers		1,426	77
<b>Total</b>		<b>3,227</b>	<b>2,244</b>

### 5.3 Consultants, contractors and agency/outsourced services

	Note 5	2008/09 R'000	2007/08 R'000
Business and advisory services		4,873	300
Legal costs		268	-
Contractors		2,293	65
Agency and support/outsourced services		21,139	33,808
<b>Total</b>		<b>28,573</b>	<b>34,173</b>

### 5.4 Audit cost – External

	Note 5	2008/09 R'000	2007/08 R'000
Regularity audits		1,613	781
<b>Total</b>		<b>1,613</b>	<b>781</b>



# NOTES TO THE ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2009

## 5.5 Inventory

	Note 5	2008/09 R'000	2007/08 R'000
Fuel, oil and gas		36	373
Other consumable materials		502	22
Maintenance material		-	1,850
Stationery and printing		3,577	4,880
<b>Total</b>		<b>4,115</b>	<b>7,125</b>

## 5.6 Owned and leasehold property expenditure

	Note 5	2008/09 R'000	2007/08 R'000
Municipal services		1,526	-
Other		4,767	4,482
<b>Total</b>		<b>6,293</b>	<b>4,482</b>

## 5.7 Travel and subsistence

	Note 5	2008/09 R'000	2007/08 R'000
Local		19,426	16,398
Foreign		18,781	15,267
<b>Total</b>		<b>38,207</b>	<b>31,665</b>

## 5.8 Other operating expenditure

	Note 5	2008/09 R'000	2007/08 R'000
Professional bodies, membership and subscription fees		2,532	1,447
Resettlement costs		1,711	855
Other		671	1,348
<b>Total</b>		<b>4,914</b>	<b>3,650</b>

## 6. FINANCIAL TRANSACTIONS IN ASSETS AND LIABILITIES

	Note	2008/09 R'000	2007/08 R'000
Other material losses written off	6.1	75	68
Debts written off	6.2	-	14
<b>Total</b>		<b>75</b>	<b>82</b>



### 6.1 Other material losses written off

	Note 6	2008/09 R'000	2007/08 R'000
<b>Nature of losses</b>			
Damages to hired vehicles		74	38
Damages to private vehicles		-	30
Petty Cash		1	-
<b>Total</b>		<b>75</b>	<b>68</b>

### 6.2 Debts written off

	Note 6	2008/09 R'000	2007/08 R'000
<b>Nature of debts written off</b>			
Salary debt		-	9
Travel and Subsistence debt		-	3
Tax debt		-	2
<b>Total</b>		<b>-</b>	<b>14</b>

## 7. TRANSFERS AND SUBSIDIES

		2008/09 R'000	2007/08 R'000
	Note		
Departmental agencies and accounts	Annex 1G	1,866,540	1,516,928
Universities and technikons	Annex 1H	69,452	45,817
Public corporations and private enterprises	Annex 1I	1,075,099	1,023,212
Non-profit institutions	Annex 1K	428,439	322,215
Households	Annex 1L	-	-
Gifts, donations and sponsorships made	Annex 1O	350	187
<b>Total</b>		<b>3,439,880</b>	<b>2,908,359</b>

## 8. EXPENDITURE FOR CAPITAL ASSETS

	Note	2008/09 R'000	2007/08 R'000
<b>Tangible assets</b>			
Machinery and equipment	24.1	3,323	7,921
<b>Total</b>		<b>3,323</b>	<b>7,921</b>



# NOTES TO THE ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2009

## 8.1 Analysis of funds utilised to acquire capital assets – 2008/09

	Voted funds R'000	Aid assistance R'000	Total R'000
<b>Tangible assets</b>			
Machinery and equipment	3,323	-	3,323
<b>Total</b>	<b>3,323</b>	<b>-</b>	<b>3,323</b>

## 8.2 Analysis of funds utilised to acquire capital assets – 2007/08

	Voted funds R'000	Aid assistance R'000	Total R'000
Machinery and equipment	7,921	-	7,921
<b>Total assets acquired</b>	<b>7,921</b>	<b>-</b>	<b>7,921</b>

## 9. CASH AND CASH EQUIVALENTS

	Note	2008/09 R'000	2007/08 R'000
Consolidated Paymaster General Account		24,135	16,121
Disbursements		-	(3)
Cash on hand		33	33
<b>Total</b>		<b>24,168</b>	<b>16,151</b>

## 10. PREPAYMENTS AND ADVANCES

	Note	2008/09 R'000	2007/08 R'000
Travel and subsistence		136	68
Advances paid to other entities		231	-
<b>Total</b>		<b>367</b>	<b>68</b>

## 11. RECEIVABLES

	Note	2008/09			2007/08	
		R'000	R'000	R'000	R'000	R'000
		Less than one year	One to three years	Older than three years	Total	Total
Claims recoverable	11.1 Annex 4	86	7	38	131	263
Trade receivables	11.2	561	-	-	561	-
Recoverable expenditure	11.3	24	79	56	159	343
Staff debt	11.4	(3)	171	-	168	213
<b>Total</b>		<b>668</b>	<b>257</b>	<b>94</b>	<b>1,019</b>	<b>819</b>



### 11.1 Claims recoverable

	Note 11	2008/09 R'000	2007/08 R'000
National departments		122	75
Households and non-profit institutions		9	188
<b>Total</b>		<b>131</b>	<b>263</b>

### 11.2 Trade receivables

	Note 11	2008/09 R'000	2007/08 R'000
MTN M-TEL		561	-
<b>Total</b>		<b>561</b>	<b>-</b>

### 11.3 Recoverable expenditure (disallowance accounts)

	Note 11	2008/09 R'000	2007/08 R'000
Income tax debt		13	6
Persal salaries and stoppages		-	337
Damages to vehicles		139	-
Value Added Taxation (VAT) in respect of the Donor Fund Project - Innovation for Poverty alleviation		7	-
<b>Total</b>		<b>159</b>	<b>343</b>

### 11.4 Staff debt

	Note 11	2008/09 R'000	2007/08 R'000
Bursary debt		61	36
Salary overpayment		59	93
Telephone debt		16	23
Previous employees - Salary overpayment		-	32
Previous employees - Resettlement debt		32	29
<b>Total</b>		<b>168</b>	<b>213</b>



# NOTES TO THE ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2009

## 12. VOTED FUNDS TO BE SURRENDERED TO THE REVENUE FUND

	Note	2008/09 R'000	2007/08 R'000
Opening balance		16,948	4,094
Transfer from statement of financial performance		18,247	16,949
Voted funds not requested/not received	1.1	-	(1)
Paid during the year		(16,948)	(4,094)
<b>Closing balance</b>		<b>18,247</b>	<b>16,948</b>

## 13. DEPARTMENTAL REVENUE TO BE SURRENDERED TO THE REVENUE FUND

	Note	2008/09 R'000	2007/08 R'000
Opening balance		23	11
Transfer from Statement of Financial Performance		333	219
Paid during the year		(352)	(207)
<b>Closing balance</b>		<b>4</b>	<b>23</b>

## 14. PAYABLES – CURRENT

Description	Note	30 Days	30+ Days	2008/09 Total	2007/08 Total
Clearing accounts	14.1	37	-	37	2
<b>Total</b>		<b>37</b>	<b>-</b>	<b>37</b>	<b>2</b>

### 14.1 Clearing accounts

	Note	2008/09 R'000	2007/08 R'000
Persal salaries and stoppages	14	37	2
<b>Total</b>		<b>37</b>	<b>2</b>





## 15. NET CASH FLOW AVAILABLE FROM OPERATING ACTIVITIES

	Note	2008/09 R'000	2007/08 R'000
Net surplus as per Statement of Financial Performance		25,753	17,168
Add back non cash/cash movements not deemed operating activities		(14,441)	3,748
Increase in receivables – current		(200)	222
Increase in prepayments and advances		(299)	15
Decrease in other current assets		-	2
Increase in payables – current		35	-
Proceeds from sale of capital assets		-	(110)
Expenditure on capital assets		3,323	7,921
Surrenders to Revenue Fund		(17,300)	(4,301)
Voted funds not requested/not received		-	(1)
<b>Net cash flow generated by operating activities</b>		<b>11,312</b>	<b>20,916</b>

## 16. RECONCILIATION OF CASH AND CASH EQUIVALENTS FOR CASH FLOW PURPOSES

	Note	2008/09 R'000	2007/08 R'000
Consolidated Paymaster-General account		24,135	16,121
Disbursements		-	(3)
Cash on hand		33	33
<b>Total</b>		<b>24,168</b>	<b>16,151</b>



**DISCLOSURE NOTES TO  
THE ANNUAL FINANCIAL STATEMENTS  
FOR THE YEAR ENDED 31 MARCH 2009**

These amounts are not recognised in the Annual Financial Statements and are disclosed to enhance the usefulness of the Annual Financial Statements.

## 17. CONTINGENT LIABILITIES

		Note	2008/09 R'000	2007/08 R'000
Liable to	Nature			
Housing loan guarantees	Employees	Annex 3A	204	204
<b>Total</b>			<b>204</b>	<b>204</b>

## 18. COMMITMENTS

		Note	2008/09 R'000	2007/08 R'000
<b>Current expenditure</b>				
Approved and contracted			1,017	667
Approved but not yet contracted			-	174
			<b>1,017</b>	<b>841</b>
<b>Capital expenditure</b>				
Approved and contracted			37	251
			<b>37</b>	<b>251</b>
<b>Total commitments</b>			<b>1,054</b>	<b>1,092</b>

## 19. ACCRUALS

		2008/09 R'000		2007/08 R'000
<b>Listed by economic classification</b>				
	30 Days	30+ Days	Total	Total
Goods and services	318	7	7	253
<b>Total</b>	<b>318</b>	<b>7</b>	<b>7</b>	<b>253</b>

		Note	2008/09 R'000	2007/08 R'000
<b>Listed by programme level</b>				
Programme 1: Administration			7	217
Programme 2: Research, Development and Innovation			218	7
Programme 3: International Cooperation and Resources			100	29
<b>Total</b>			<b>7</b>	<b>253</b>



	Note	2008/09 R'000	2007/08 R'000
Confirmed balances with other departments	Annex 5	-	17
Confirmed balances with other government entities	Annex 5	290	97
<b>Total</b>		<b>290</b>	<b>114</b>

## 20. EMPLOYEE BENEFITS

	Note	2008/09 R'000	2007/08 R'000
Leave entitlement		5,347	3,701
Thirteenth cheque		3,080	2,373
Capped leave commitments		2,838	2,643
<b>Total</b>		<b>11,265</b>	<b>8,717</b>

## 21. LEASE COMMITMENTS

### 21.1 Operating leases expenditure

2008/09	Land R'000	Buildings and other fixed structures R'000	Machinery and equipment R'000	Total R'000
Not later than 1 year	-	-	3,767	3,767
Later than 1 year and not later than 5 years	-	-	1,402	1,402
<b>Total lease commitments</b>	<b>-</b>	<b>-</b>	<b>5,169</b>	<b>5,169</b>

2007/08	Land R'000	Buildings and other fixed structures R'000	Machinery and equipment R'000	Total R'000
Not later than 1 year	-	-	1,821	1,821
Later than 1 year and not later than 5 years	-	-	4,060	4,060
<b>Total lease commitments</b>	<b>-</b>	<b>-</b>	<b>5,881</b>	<b>5,881</b>

## 22. RELATED PARTY TRANSACTIONS

The following entities are under the Ownership Control of the Department in terms of Chapter 1 of the Public Finance Management Act, 1999, and report to the Minister of Science and Technology, and as such are related parties to the Department:



**Schedule 3A – National Public Entities**

- Africa Institute of South Africa
- Human Sciences Research Council
- National Research Foundation
- South African National Space Agency
- Technology Innovation Agency

**Schedule 3B – National Government Business Enterprises**

- Council for Scientific and Industrial Research

The Department's transactions with these entities are limited to transfer and subsidy payments. Annexures IG, II and IK to the Annual Financial Statement reflects payments to these public entities. Where transactions other than these occur, they occur within a normal supplier/client relationship in terms of the procurement procedures of the Department in terms of the Public Finance Management Act, 1999.

**23. KEY MANAGEMENT PERSONNEL**

	No. of Individuals	2008/09 R'000	2007/08 R'000
Political office bearers (provide detail below)	2	2,891	2,053
Officials:			
Level 15 to 16	8	5,807	5,655
Level 14 (incl. CFO if at a lower level)	1	866	655
<b>Total</b>		<b>9,564</b>	<b>8,363</b>

The key management personnel do not qualify for any remuneration other than the approved remuneration structures for the different classes of Key Management Personnel (Political Office Bearers and Officials).

**24. MOVABLE TANGIBLE CAPITAL ASSETS**

MOVEMENT IN MOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2009					
	Opening balance	Current year adjustments to prior year balances	Additions	Disposals	Closing balance
	R'000	R'000	R'000	R'000	R'000

**MACHINERY AND EQUIPMENT**

Transport assets	3,051	-	-	-	3,051
Computer equipment	11,022	-	2,316	(674)	12,664
Furniture and office equipment	9,007	-	666	(12)	9,661
Other machinery and equipment	7,077	-	341	-	7,418



MOVEMENT IN MOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2009

	Opening balance	Current year adjustments to prior year balances	Additions	Disposals	Closing balance
	R'000	R'000	R'000	R'000	R'000
<b>TOTAL MOVABLE TANGIBLE CAPITAL ASSETS</b>	<b>30,157</b>	<b>-</b>	<b>3,323</b>	<b>(686)</b>	<b>32,794</b>

**24.1 Additions**

ADDITIONS TO MOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2009

	Cash	Non-cash	(Capital work in progress current costs and finance lease payments)	Received current, not paid (Paid current year, received prior year)	Total
	R'000	R'000	R'000	R'000	R'000

**MACHINERY AND EQUIPMENT**

Transport assets	-	-	-	-	-
Computer equipment	2,316	-	-	-	2,316
Furniture and office equipment	666	-	-	-	666
Other machinery and equipment	341	-	-	-	341

**TOTAL ADDITIONS TO MOVABLE TANGIBLE CAPITAL ASSETS**

<b>3,323</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,323</b>
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**24.2 Disposals**

DISPOSALS OF MOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2009

	Sold for cash	Transfer out or destroyed or scrapped	Total disposals	Cash received actual
	R'000	R'000	R'000	R'000

**MACHINERY AND EQUIPMENT**

Transport assets	-	-	-	-
Computer equipment	-	-	-	-
Furniture and office equipment	-	(674)	(674)	-
Other machinery and equipment	-	(12)	(12)	-

**TOTAL DISPOSAL OF MOVABLE TANGIBLE CAPITAL ASSETS**

<b>-</b>	<b>(686)</b>	<b>(686)</b>	<b>-</b>
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**DISCLOSURE NOTES TO  
THE ANNUAL FINANCIAL STATEMENTS  
FOR THE YEAR ENDED 31 MARCH 2009**

**24.3 Movement for 2007/08**

MOVEMENT IN MOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2008				
	Opening balance	Additions	Disposals	Closing balance
	R'000	R'000	R'000	R'000
<b>MACHINERY AND EQUIPMENT</b>	<b>22,640</b>	<b>7,921</b>	<b>404</b>	<b>30,157</b>
Transport assets	2,531	924	(404)	3,051
Computer equipment	7,566	3,456	-	11,022
Furniture and office equipment	8,853	154	-	9,007
Other machinery and equipment	3,690	3,387	-	7,077
<b>TOTAL MOVABLE TANGIBLE ASSETS</b>	<b>22,640</b>	<b>7,921</b>	<b>(404)</b>	<b>30,157</b>

**24.4 Minor assets**

MINOR ASSETS OF THE DEPARTMENT FOR THE YEAR ENDED 31 MARCH 2009					
	Intangible assets	Heritage assets	Machinery and equipment	Biological assets	Total
	R'000	R'000	R'000	R'000	R'000
Minor assets	-	-	299	-	299
<b>Total</b>	<b>-</b>	<b>-</b>	<b>299</b>	<b>-</b>	<b>299</b>

	Intangible assets	Heritage assets	Machinery and equipment	Biological assets	Total
Number of minor assets	-	-	110	-	110
<b>Total</b>	<b>-</b>	<b>-</b>	<b>110</b>	<b>-</b>	<b>110</b>



## 25. IMMOVABLE TANGIBLE CAPITAL ASSETS

MOVEMENT IN IMMOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2009					
	Opening balance	Current year adjustments to prior year balances	Additions	Disposals	Closing balance
	R'000	R'000	R'000	R'000	R'000
<b>BUILDINGS AND OTHER FIXED STRUCTURES</b>	<b>133,174</b>	-	-	-	<b>133,174</b>
Non-residential buildings	133,174	-	-	-	133,174
<b>TOTAL IMMOVABLE TANGIBLE CAPITAL ASSETS</b>	<b>133,174</b>	-	-	-	<b>133,174</b>

### 25.1 Additions

ADDITIONS TO IMMOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2009					
	Cash	Non-cash	(Capital work in progress current costs and finance lease payments)	Received current, not paid (Paid current year; received prior year)	Total
	R'000	R'000	R'000	R'000	R'000
<b>BUILDING AND OTHER FIXED STRUCTURES</b>	-	-	-	-	-
Non-residential buildings	-	-	-	-	-
<b>TOTAL ADDITIONS TO IMMOVABLE TANGIBLE CAPITAL ASSETS</b>	-	-	-	-	-





## 25.2 Disposals

DISPOSALS OF IMMOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2009				
	Sold for cash	Transfer out or destroyed or scrapped	Total disposals	Cash received actual
	R'000	R'000	R'000	R'000
<b>BUILDINGS AND OTHER FIXED STRUCTURES</b>				
Dwellings	-	-	-	
<b>TOTAL DISPOSALS OF IMMOVABLE TANGIBLE CAPITAL ASSETS</b>	-	-	-	-

## 25.3 Movement for 2007/08

MOVEMENT IN IMMOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2008				
	Opening balance	Additions	Disposals	Closing balance
	R'000	R'000	R'000	R'000
<b>BUILDINGS AND OTHER FIXED STRUCTURES</b>				
Non-residential buildings	133,174	-	-	133,174
<b>TOTAL IMMOVABLE TANGIBLE ASSETS</b>	<b>133,174</b>	<b>-</b>	<b>-</b>	<b>133,174</b>

## 25.4 Immovable assets valued at RI

IMMOVABLE ASSETS VALUED AT RI IN THE ASSET REGISTER FOR 31 MARCH 2009					
	Buildings and other fixed structures	Heritage assets	Land and subsoil assets	Investment property	Total
	R'000	R'000	R'000	R'000	R'000
RI Immovable assets	-	-	-	-	-
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



## ANNEXURE 1G

### STATEMENT OF TRANSFERS TO DEPARTMENTAL AGENCIES AND ACCOUNTS

DEPARTMENT/ AGENCY/ ACCOUNT	TRANSFER ALLOCATION				TRANSFER		2007/08
	Adjusted Appropriation Act	Roll Overs	Adjustments	Total Available	Actual Transfer	% of Available Funds Transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000
Africa Institute of South Africa	30,464	-	-	30,464	30,464	100%	26,530
Council for Geoscience	11	-	-	11	11	100%	-
Human Sciences Research Council	187,397	-	-	187,397	187,397	100%	180,212
National Research Foundation	1,622,100	-	(38,976)	1,583,124	1,578,008	100%	1,302,303
South African Medical Research Council	13,737	-	-	13,737	13,737	100%	15,750
South African National Biodiversity Institute	2,700	-	-	2,700	2,700	100%	-
Agricultural Research Council	54,223	-	-	54,223	54,223	100%	-
<b>Total</b>	<b>1,910,632</b>	<b>-</b>	<b>(38,976)</b>	<b>1,871,656</b>	<b>1,866,540</b>		<b>1,524,795</b>



**ANNEXURE 1H**

**STATEMENT OF TRANSFERS TO UNIVERSITIES OF TECHNOLOGY**

UNIVERSITY/ TECHNIKON	TRANSFER ALLOCATION				TRANSFER			2007/08
	Adjusted Appropriation Act	Roll Overs	Adjustments	Total Available	Actual Transfer	Amount not transferred	% of Available Funds Transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000
North-West University	-	-	9,489	9,489	9,489	-	100%	3,751
Tshwane University of Technology	-	-	58	58	58	-	100%	200
University of Cape Town	-	-	14,436	14,436	14,436	-	100%	4,478
University of Fort Hare	-	-	398	398	398	-	100%	167
University of Free State	-	-	200	200	200	-	100%	5,699
University of Johannesburg	-	-	20	20	20	-	100%	-
University of KwaZulu-Natal	-	-	887	887	887	-	100%	103
University of Limpopo	-	-	420	420	420	-	100%	200
University of Pretoria	-	-	414	414	414	-	100%	5,882
Rhodes University	-	-	100	100	100	-	100%	-
Stellenbosch University	-	-	12,916	12,916	12,916	-	100%	15,341
University of Venda	-	-	400	400	400	-	100%	200
University of the Western Cape	18,309	-	9,259	27,568	27,568	-	100%	3,018
University of the Witwatersrand	-	-	1,446	1,446	1,446	-	100%	4,364
University of Zululand	-	-	700	700	700	-	100%	464
<b>Total</b>	<b>18,309</b>	<b>-</b>	<b>51,143</b>	<b>69,452</b>	<b>69,452</b>	<b>-</b>		<b>43,867</b>



## ANNEXURE II

### STATEMENT OF TRANSFERS/SUBSIDIES TO PUBLIC CORPORATIONS AND PRIVATE ENTERPRISES

NAME OF PUBLIC CORPORATION/ PRIVATE ENTERPRISE	TRANSFER ALLOCATION				EXPENDITURE				2007/08
	Adjusted Appropriation Act	Roll Overs	Adjustments	Total Available	Actual Transfer	% of Available Funds Transferred	Capital	Current	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000	R'000
<b>Public Corporations</b>									
<b>Transfers</b>									
Council for Mineral Technology (MINTEK)	-	-	42,978	42,978	42,978	100%	27,300	15,678	26,536
Council for Scientific and Industrial Research (CSIR)	324,383	-	134,249	458,632	458,550	100%	223,790	234,760	481,367
SA Nuclear Energy Corporation	-	-	18,908	18,908	18,884	100%	-	18,884	-
<b>Subtotal</b>	<b>324,383</b>	<b>-</b>	<b>196,135</b>	<b>520,518</b>	<b>520,412</b>		<b>251,090</b>	<b>269,322</b>	<b>507,903</b>
<b>Subsidies</b>									
Council for Scientific and Industrial Research (CSIR)	554,687	-	-	554,687	554,687	100%	-	554,687	517,352
<b>Subtotal</b>	<b>554,687</b>	<b>-</b>	<b>-</b>	<b>554,687</b>	<b>554,687</b>		<b>-</b>	<b>554,687</b>	<b>517,352</b>
<b>Total</b>	<b>879,070</b>	<b>-</b>	<b>196,135</b>	<b>1,075,205</b>	<b>1,075,099</b>		<b>251,090</b>	<b>824,009</b>	<b>1,025,255</b>



**ANNEXURE 1K**

**STATEMENT OF TRANSFERS TO NON-PROFIT INSTITUTIONS**

NON-PROFIT INSTITUTIONS	TRANSFER ALLOCATION				EXPENDITURE		2007/08
	Adjusted Appropriation Act	Rollovers	Adjustments	Total Available	Actual Transfer	% of Available Funds Transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000
<b>Transfers</b>							
Academy of Science of South Africa	6,750	-	-	6,750	6,750	100%	2,580
Acorn Technologies (Pty) Ltd.	-	-	-	-	-	-	245
AfricaBio	-	-	-	-	-	-	150
Aquaculture Association of South Africa	-	-	-	-	-	-	45
Association for Mathematics Education of South Africa	-	-	-	-	-	-	225
B. North (Council for Scientific and Industrial Research - Hydrogen Competency Centre)	-	-	-	-	-	-	7
Bakomosa Science and Technology Education Centre	285	-	-	285	285	100%	-
Beyond 2000 Publishers	1,000	-	-	1,000	1,000	100%	750
Bio2Biz SA 2008	150	-	-	150	150	100%	-
Biopad Trust	154,587	-	(88,357)	66,230	64,724	98%	29,837
Black Science, Technology and Engineering Professionals	3,844	-	-	3,844	3,844	100%	-
Cape Biotech Trust	99,757	-	(50,000)	49,757	49,757	100%	34,355
Cape Peninsula University of Technology	-	-	-	-	-	-	123
Council for Geoscience	-	-	-	-	-	-	1,865
Council for Scientific and Industrial Research	-	-	-	-	-	-	9,000
Da Vinci Integration Enterprises (Pty) Ltd.	2,280	-	-	2,280	2,280	100%	2,417
Department of Public Enterprises	-	-	-	-	-	-	2,723
Development Bank of Southern Africa	290	-	-	290	290	100%	290
Dr K Parker	46	-	-	46	46	100%	-



NON-PROFIT INSTITUTIONS	TRANSFER ALLOCATION				EXPENDITURE		2007/08
	Adjusted Appropriation Act	Rollovers	Adjustments	Total Available	Actual Transfer	% of Available Funds Transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000
Dr P Masangane	5	-	-	5	5	100%	-
East Coast Biotechnology Innovation Centre Trust	107,426	-	(50,000)	57,426	57,426	100%	32,620
Expo for Young Scientists	-	-	-	-	-	-	1,000
High Impact Innovation	331	-	-	331	331	100%	110
Higher Education South Africa	97	-	-	97	97	100%	-
Institute of Natural Resources	-	-	-	-	-	-	360
Interactive Science Foundation	250	-	-	250	250	100%	-
International Centre for Genetic Engineering and Biotechnology	10,000	-	-	10,000	10,000	100%	-
International Congress of Entomology 2008	100	-	-	100	100	100%	-
International Congress on Nitrogen Fixation	-	-	-	-	-	-	95
iThemba LABS	1,295	-	-	1,295	1,295	100%	14
Ivory Park Secondary School	3	-	-	3	3	100%	-
KPMG Services (Pty) Ltd.	-	-	-	-	-	-	103
Limpopo Province Education Development Trust	124	-	-	124	124	100%	-
National Bioinformatics Network	4,149	-	-	4,149	4,149	100%	17,515
National Institute for Higher Education	650	-	-	650	650	100%	-
National Research Foundation	-	-	-	-	-	-	5,040
National Science and Technology Forum	18,510	-	-	18,510	18,510	100%	6,000
Nelson Mandela Metropolitan University	-	-	-	-	-	-	18
Northern Flagship Institution	-	-	-	-	-	-	1,000
Nuclear Energy Corporation of South Africa	16,500	-	-	16,500	16,500	100%	20,706



**ANNEXURES TO  
THE ANNUAL FINANCIAL STATEMENTS  
FOR THE YEAR ENDED 31 MARCH 2009**

NON-PROFIT INSTITUTIONS	TRANSFER ALLOCATION				EXPENDITURE		2007/08
	Adjusted Appropriation Act	Rollovers	Adjustments	Total Available	Actual Transfer	% of Available Funds Transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000
Osizweni Education and Development Centre	250	-	-	250	250	100%	-
Pelchem (Pty) Ltd.	9,922	-	-	9,922	9,922	100%	-
Psychological Society of South Africa	300	-	-	300	300	100%	-
Plantbio Trust	86,000	-	(50,000)	36,000	36,000	100%	21,170
Port Elizabeth Museum	-	-	-	-	-	-	50
Prof. N Potgieter	2	-	-	2	2	100%	-
Roger Layton Associates (RLA) (Pty) Ltd.	39	-	-	39	39	100%	-
SA Node of the Millennium Project (PTY) Ltd.	-	-	-	-	-	-	100
Sci-Bono Discovery Centre	217	-	-	217	217	100%	2,200
Science Education Foundation	190	-	-	190	190	100%	-
South African Agency for Science and Technology Advancement	16,795	-	-	16,795	16,795	100%	11,176
South African Association of Science and Technology Centres	550	-	-	550	550	100%	-
South African Chemical Institute	220	-	-	220	220	100%	130
South African Institute of Civil Engineering	80	-	-	80	80	100%	-
South African Institute of Physics	207	-	-	207	207	100%	376
South African Mathematics Foundation	3,976	-	-	3,976	3,976	100%	2,692
South African National Biodiversity Institute	-	-	-	-	-	-	250
South African National Energy Research Institute	54,268	-	-	54,268	54,268	100%	45,000
South African Young Nuclear Professionals Society	-	-	-	-	-	-	127
Southern African Research and Innovation Management Association	414	-	-	414	414	100%	878
Stellenbosch University	-	-	-	-	-	-	9





NON-PROFIT INSTITUTIONS	TRANSFER ALLOCATION				EXPENDITURE		2007/08
	Adjusted Appropriation Act	Rollovers	Adjustments	Total Available	Actual Transfer	% of Available Funds Transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000
Telkom South Africa	1,800	-	-	1,800	1,800	100%	-
The Growth Laboratory (Pty) Ltd.	-	-	-	-	-	-	53
The Innovation Hub Management Company (Pty) Ltd.	527	-	-	527	527	100%	-
The Medical Research Council	-	-	-	-	-	-	6,981
The National Institute for Communicable Disease	200	-	-	200	200	100%	-
The Thuthuka Education Upliftment Fund	7,500	-	-	7,500	7,500	100%	6,143
The Water Research Commission	636	-	-	636	636	100%	600
Tshumisano Trust	50,100	-	-	50,100	50,100	100%	56,085
Vene Muskett Web Design Studio	11	-	-	11	11	100%	-
Wine Industry Network of Expertise and Technology	-	-	-	-	-	-	2,000
Wits Commercial Enterprise (Pty) Ltd.	44	-	-	44	44	100%	187
Wits Health Consortium (Pty) Ltd.	55	-	-	55	55	100%	-
<b>Subtotal</b>	<b>662,732</b>	<b>-</b>	<b>(238,357)</b>	<b>424,375</b>	<b>422,869</b>		<b>325,400</b>
<b>Transfers</b>							
Academy of Science of South Africa	5,570	-	-	5,570	5,570	100%	3,400
<b>Subtotal</b>	<b>5,570</b>	<b>-</b>	<b>-</b>	<b>5,570</b>	<b>5,570</b>		<b>3,400</b>
<b>Total</b>	<b>668,302</b>	<b>-</b>	<b>(238,357)</b>	<b>429,945</b>	<b>428,439</b>		<b>328,800</b>



## ANNEXURE II

### STATEMENT OF TRANSFERS TO HOUSEHOLDS

HOUSEHOLDS	TRANSFER ALLOCATION			EXPENDITURE			2007/08
	Adjusted Appropriation Act	Roll Overs	Adjustments	Total Available	Actual Transfer	% of Available Funds Transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000
Transfers							
Gifts and Donations	-	-	-	-	-	-	646
<b>TOTAL</b>	-	-	-	-	-	-	<b>646</b>

## ANNEXURE IN

### STATEMENT OF LOCAL AND FOREIGN AID ASSISTANCE RECEIVED

NAME OF DONOR	PURPOSE	OPENING			CLOSING
		Balance	Revenue	Expenditure	Balance
		R'000	R'000	R'000	R'000
<b>Received in cash</b>					
Government of the Republic of Finland	The Knowledge Partnership on Information and Communication Technology (SAFIPA)	-	8,445	8,445	-
Government of the Republic of Finland	The Cooperation Framework on Innovation Systems between Finland and south Africa (COFISA)	-	8,096	7,968	128
Canadian Government	Epidemiological Model for HIV/AIDS Programme	-	1,664	1,664	-
European Union	Innovation for Poverty Alleviation		7,093	48	7,045
<b>Subtotal</b>		<b>-</b>	<b>25,298</b>	<b>18,125</b>	<b>7,173</b>
<b>Received in kind</b>					
Government of Germany	Technical Assistant - Improved Bilateral Relationships with the German National System of Innovation.	-	449	-	449
Japan	AICAD Technical Assistance - Assistance with the creation and the implementation of AICAD and the design and implementation of pilot projects through AICAD.	-	1,700	-	1,700



NAME OF DONOR	PURPOSE	OPENING			CLOSING
		Balance	Revenue	Expenditure	Balance
		R'000	R'000	R'000	R'000
Japan	Science Centre Senior Volunteers in Limpopo - To support science centres with developing teaching material for science and maths education and develop exhibitions.	-	1,500	-	1,500
Japan	Science Centre Senior Volunteers in the Eastern Cape - To support science centres with developing teaching material for science and maths education and develop exhibitions.	-	1,000	-	1,000
Japan	Technical Assistant - Improved bilateral relationships with the Japanese national system of innovation.	-	1,700	-	1,700
<b>Subtotal</b>		-	<b>6,349</b>	-	<b>6,349</b>
<b>Total</b>		-	<b>31,647</b>	<b>18,125</b>	<b>13,522</b>



## ANNEXURE 10

### STATEMENT OF GIFTS, DONATIONS AND SPONSORSHIPS MADE AND REMISSIONS, REFUNDS AND PAYMENTS MADE AS AN ACT OF GRACE

NATURE OF GIFT, DONATION OR SPONSORSHIP (Group major categories but list material items including name of organisation)	2008/09 R'000	2007/08 R'000
Paid in cash		
South African Women in Science Awards	350	419
Corporate and promotional gifts	-	68
<b>Total</b>	<b>350</b>	<b>487</b>

## ANNEXURE 3A

### STATEMENT OF FINANCIAL GUARANTEES ISSUED AS AT 31 MARCH 2008 – LOCAL

Guarantor institution	Guarantee in respect of	Original guaranteed capital amount R'000	Opening balance 1 April 2008 R'000	Guarantees draw downs during the year R'000	Guarantees repayments/ cancelled/ reduced/ released during the year R'000	Revaluations R'000	Closing balance 31 March 2009 R'000	Guaranteed interest for year ended 31 March 2009 R'000	Realised losses not recoverable i.e. claims paid out R'000
Housing									
ABSA Bank		97	97	-	-	-	97	-	-
Standard Bank		12	12	-	-	-	12	-	-
First National Bank		28	28	-	-	-	28	-	-
Nedbank		67	67	-	-	-	67	-	-
<b>Total</b>		<b>204</b>	<b>204</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>204</b>	<b>-</b>	<b>-</b>



## ANNEXURE 4

### CLAIMS RECOVERABLE

Government Entity	Confirmed balance outstanding		Unconfirmed balance outstanding		Total	
	31/03/2009	31/03/2008	31/03/2009	31/03/2008	31/03/2009	31/03/2008
	R'000	R'000	R'000	R'000	R'000	R'000
<b>Department</b>						
Department of Arts and Culture	21	-	-	-	21	-
Department of Correctional Services	-	-	5	5	5	5
Department of Defence	-	-	-	1	-	1
Department of Environmental Affairs and Tourism	-	2	-	-	-	2
Department of Land Affairs	23	-	-	-	23	-
Department of Trade and Industry	-	-	-	1	-	1
Department of Water Affairs and Forestry - Polokwane	-	-	7	-	7	-
Department of Water Affairs and Forestry - Pretoria	5	-	-	-	5	-
Gauteng Department of Social Development	-	-	8	8	8	8
Gauteng: Agriculture Conservation Environment	-	-	-	1	-	1
Road Traffic Management Corporation	-	-	34	-	34	-
<b>Subtotal</b>	<b>49</b>	<b>2</b>	<b>54</b>	<b>16</b>	<b>103</b>	<b>18</b>
<b>Other government entities</b>						
Government Employee Pension Fund	-	-	19	-	19	-
<b>Subtotal</b>	<b>-</b>	<b>-</b>	<b>19</b>	<b>-</b>	<b>19</b>	<b>-</b>
<b>Total</b>	<b>49</b>	<b>2</b>	<b>73</b>	<b>16</b>	<b>122</b>	<b>18</b>



## ANNEXURE 5

### INTERGOVERNMENT PAYABLES

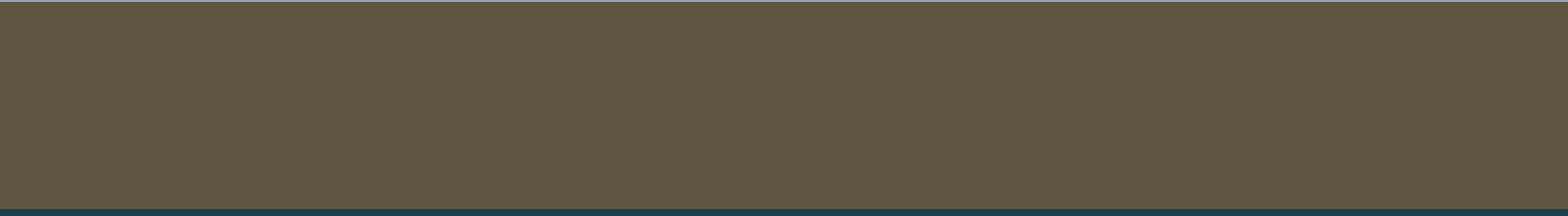
GOVERNMENT ENTITY	Confirmed balance outstanding		Unconfirmed balance outstanding		Total	
	31/03/2009	31/03/2008	31/03/2009	31/03/2008	31/03/2009	31/03/2008
	R'000	R'000	R'000	R'000	R'000	R'000
<b>DEPARTMENTS</b>						
<b>Current</b>						
South African Police Service	-	2	-	-	-	2
Department of Justice and Constitutional Development	-	15	-	-	-	15
<b>Total</b>	<b>-</b>	<b>17</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>17</b>
<b>OTHER GOVERNMENT ENTITY</b>						
<b>Current</b>						
Public Administration Leadership and Management Academy	290	97	-	-	290	97
<b>Total</b>	<b>290</b>	<b>97</b>	<b>-</b>	<b>-</b>	<b>290</b>	<b>97</b>

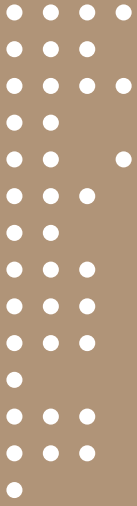












# HUMAN RESOURCES

SCIENCE AND TECHNOLOGY EXPERT SERVICES





## I. Personnel

I.1 – Personnel costs by programme, 2008/2009						
Programme	Total Expenditure (R'000)	Personnel Expenditure (R'000)	Training Expenditure (R'000)	Professional and Special Services (R'000)	Personnel cost as a percent of total expenditure	Average personnel cost per employee (R'000)
Corporate Services and Governance	123840	57148	3404	3348	46.15%	371
Research, Development and Innovation	864535	18393	53	3161	2.13%	428
International Cooperation and Resources	140509	30393	65	576	21.63%	515
Human Capital and Knowledge Systems	1455009	16963	25	134	1.17%	435
Socio-Economic Partnerships	1119575	21974	36	214	1.96%	458
<b>Total</b>	<b>3703468</b>	<b>144871</b>	<b>3583</b>	<b>7433</b>	<b>3.91%</b>	<b>422</b>

I.2 – Personnel costs by salary bands, 2008/2009			
Salary bands	Personnel Expenditure (R'000)	% of total personnel cost	Average personnel cost per employee (R'000)
Lower skilled (Levels 1-2)	0	0.00%	0
Skilled (Levels 3-5)	1030	0.71%	94
Highly skilled production (Levels 6-8)	12080	8.34%	130
Highly skilled supervision (Levels 9-12)	60800	41.97%	400
Senior management (Levels 13-16)	70961	48.98%	816
<b>Total</b>	<b>144871</b>	<b>100.00%</b>	<b>422</b>

I.3 – Salaries, overtime, home owners allowance and medical assistance by programme, 2008/2009								
Programme	Salaries		Overtime		Home Owners Allowance		Medical Assistance	
	Amount (R'000)	Salaries as a % of personnel cost	Amount (R'000)	Overtime as a % of personnel cost	Amount (R'000)	HOA as a % of personnel cost	Amount (R'000)	Medical Assistance as a % of personnel cost
Corporate Services and Governance	57148	39.45%	273	0.48%	969	1.70%	1419	2.48%
Research, Development and Innovation	18393	12.70%	11	0.06%	419	2.28%	306	1.66%
International Cooperation and Resources	30393	20.98%	101	0.33%	416	1.37%	504	1.66%
Human Capital and Knowledge Systems	16963	11.71%	1	0.01%	299	1.76%	359	2.12%
Socio-Economic Partnerships	21974	15.17%	0	0.00%	363	1.65%	502	2.28%



1.4 – Salaries, overtime, home owners allowance and medical assistance by salary bands, 2008/2009

Salary Bands	Salaries		Overtime		Home Owners Allowance		Medical Assistance	
	Amount (R'000)	Salaries as a % of personnel cost	Amount (R'000)	Overtime as a % of personnel cost	Amount (R'000)	HOA as a % of personnel cost	Amount (R'000)	Medical Assistance as a % of personnel cost
Lower skilled (Levels 1-2)	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Skilled (Levels 3-5)	1030	0.71%	29	0.02%	652	0.45%	450	0.31%
Highly skilled production (Levels 6-8)	12080	8.34%	59	0.04%	958	0.66%	1787	1.23%
Highly skilled supervision (Levels 9-12)	60800	41.97%	298	0.21%	856	0.59%	853	0.59%
Senior management (Levels 13-16)	70961	48.98%	0	0	0	0.00%	0	0
<b>Total</b>	<b>144871</b>	<b>100.00%</b>	<b>386</b>	<b>0.27%</b>	<b>2466</b>	<b>1.70%</b>	<b>3090</b>	<b>2.13%</b>

## 2. Employment and vacancies

The vacancy rate reflects the percentage of posts that are not filled.

2.1 – Employment and vacancies by programme, 31 March 2009

Programme	Number of posts	Number of posts filled	Vacancy Rate	Number of posts filled additional to the establishment
Corporate Services and Governance	176	154	12.50%	-
Research, Development and Innovation	50	43	14.00%	-
International Cooperation and Resources	65	59	9.23%	-
Human Capital and Knowledge Systems	45	39	13.33%	-
Socio-Economic Partnerships	55	48	12.73%	-
<b>Total</b>	<b>391</b>	<b>343</b>	<b>12.28%</b>	<b>-</b>





### 2.2 – Employment and vacancies by salary bands, 31 March 2009

Salary band	Number of posts	Number of posts filled	Vacancy Rate	Number of posts filled additional to the establishment
Lower skilled (Levels 1-2)	0	0	0.00%	-
Skilled (Levels 3-5)	10	10	0.00%	-
Highly skilled production (Levels 6-8)	106	94	11.32%	-
Highly skilled supervision (Levels 9-12)	177	152	14.12%	-
Senior management (Levels 13-16)	98	87	11.22%	-

## 3. Job evaluation

### 3.1 – Job Evaluation, 1 April 2008 to 31 March 2009

Salary band	Number of posts	Number of Jobs Evaluated	% of posts evaluated by salary bands	Posts Upgraded		Posts downgraded	
				Number	% of posts evaluated	Number	% of posts evaluated
Lower skilled (Levels 1-2)	0	0	0.00%	0	0.00%	0	-
Skilled (Levels 3-5)	10	0	0.00%	0	0.00%	0	-
Highly skilled production (Levels 6-8)	97	3	3.09%	0	0.00%	0	-
Highly skilled supervision (Levels 9-12)	167	141	84.43%	141	84.43%	0	-
Senior Management Service Band A	65	12	18.46%	0	0.00%	0	-
Senior Management Service Band B	20	3	15.00%	3	100.00%	0	-
Senior Management Service Band C	6	1	16.67%	0	0.00%	0	-
Senior Management Service Band D	1	0	0.00%	0	0.00%	0	-
<b>Total</b>	<b>366</b>	<b>160</b>	<b>43.72%</b>	<b>144</b>	<b>39.34%</b>	<b>0</b>	<b>-</b>

### 3.2 – Profile of employees whose salary positions were upgraded due to their posts being upgraded, 1 April 2008 to 31 March 2009

Beneficiaries	African	Asian	Coloured	White	Total
Female	63	3	4	5	75
Male	44	1	3	5	53
<b>Total</b>	<b>107</b>	<b>4</b>	<b>7</b>	<b>10</b>	<b>128</b>



#### 4. Employment changes

4.1 – Annual turnover rates by salary band for the period 1 April 2008 to 31 March 2009

Salary band	Number of employees per band as on 1 April 2008	Appointments and transfers into the department	Terminations and transfers out of the department	Turnover rate
Lower skilled (Levels 1-2)	0	0	0	0.00%
Skilled (Levels 3-5)	9	5	3	33.33%
Highly skilled production (Levels 6-8)	95	22	29	30.53%
Highly skilled supervision (Levels 9-12)	150	27	23	15.33%
Senior Management Service Band A	58	9	5	8.62%
Senior Management Service Band B	17	6	2	11.76%
Senior Management Service Band C	5	2	1	20.00%
Senior Management Service Band D	1	0	0	0.00%
<b>Total</b>	<b>335</b>	<b>71</b>	<b>63</b>	<b>18.81%</b>

4.2 – Reasons why staff are leaving the department

Termination Type	Number	% of total
Death	4	6.35%
Resignation	9	14.29%
Expiry of contract	36	57.14%
Dismissal – operational changes	0	0.00%
Dismissal – misconduct	0	0.00%
Dismissal – inefficiency	0	0.00%
Discharged due to ill-health	0	0.00%
Retirement	2	3.17%
Transfers to other public service departments	12	19.05%
Other	0	0.00%
<b>Total</b>	<b>63</b>	
Total number of employees who left as a % of the total employment		18.81%





#### 4.3 – Promotions by salary band

Salary band	Employees 1 April 2008	Promotions to another salary level	Salary bands promotions as a % of employees by salary level	Progressions to another notch within a salary level	Notch progressions as a % of employees by salary band
Lower skilled (Levels 1-2)	0	0	0.00%	0	0.00%
Skilled (Levels 3-5)	9	0	0.00%	8	88.89%
Highly skilled production (Levels 6-8)	95	2	2.11%	68	71.58%
Highly skilled supervision (Levels 9-12)	150	4	2.67%	4	2.67%
Senior management (Levels 13-16)	81	6	7.41%	36	44.44%
<b>Total</b>	<b>335</b>	<b>12</b>	<b>3.58%</b>	<b>116</b>	<b>34.63%</b>

## 5. Employment equity

The tables in this section are based on the formats prescribed by the Employment Equity Act, 55 of 1998.

#### 5.1 – Total number of employees (including employees with disabilities) in each of the following occupational categories as on 31 March 2009

Occupational categories (SASCO)	Male				Female			
	African	Coloured	Indian	White	African	Coloured	Indian	White
Management (Levels 13-6)	39	3	0	7	19	2	2	8
Middle management (Levels 9-12)	47	4	7	4	82	5	4	5
Administrative (Levels 6-8)	18	2	1	1	56	8	2	7
Clerical (Levels 3-5)	5	0	0	0	5	0	0	0
Elementary occupations (Levels 1-2)	0	0	0	0	0	0	0	0
<b>Total</b>	<b>109</b>	<b>9</b>	<b>8</b>	<b>12</b>	<b>162</b>	<b>15</b>	<b>8</b>	<b>20</b>
Employees with disabilities	1	0	1	2	2	0	0	1





5.2 – Total number of employees (including employees with disabilities) in each of the following occupational bands as on 31 March 2009

Occupational bands	Male				Female				Total
	African	Coloured	Indian	White	African	Coloured	Indian	White	
Management (Levels 13-16)	3	0	0	1	1	1	0	0	6
Middle management (Levels 9-12)	36	3	7	6	18	1	2	8	81
Administrative (Levels 6-8)	47	4	1	4	82	5	4	5	152
Clerical (Levels 3-5)	18	2	0	1	56	8	2	7	94
Elementary occupations (Levels 1-2)	5	0	0	0	5	0	0	0	10
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Employees with disabilities	109	9	8	12	162	15	8	20	343





5.3 – Recruitment for the period 1 April 2008 to 31 March 2009

Occupational bands	Male				Female				Total
	African	Coloured	Indian	White	African	Coloured	Indian	White	
Top management (Levels 15-16)	1	0	0	1	0	0	0	0	2
Senior management (Levels 13-14)	6	0	0	1	6	0	0	1	14
Professionally qualified and experienced specialists and mid-management (Levels 9-12)	7	1	0	1	16	0	1	1	27
Skilled technical and academically qualified workers, junior management, supervisors, foreman and superintendents (Levels 6-8)	7	0	0	0	13	2	0	1	23
Semi-skilled and discretionary decision making (Levels 3-5)	2	0	0	0	3	0	0	0	5
Unskilled and defined decision making (Levels 1-2)	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>23</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>38</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>71</b>



5.4 – Promotions for the period 1 April 2008 to 31 March 2009

Occupational bands	Male				Female				Total
	African	Coloured	Indian	White	African	Coloured	Indian	White	
Top management (Levels 15-16)	0	0	0	0	0	0	0	0	0
Senior management (Levels 13-14)	3	0	1	1	1	0	0	0	6
Professionally qualified and experienced specialists and mid-management (Levels 9-12)	3	0	0	0	1	0	0	0	4
Skilled technical and academically qualified workers, junior management, supervisors, foreman and superintendents (Levels 6-8)	0	0	0	0	2	0	0	0	2
Semi-skilled and discretionary decision making (Levels 3-5)	0	0	0	0	0	0	0	0	0
Unskilled and defined decision making (Levels 1-2)	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>

5.5 – Terminations for the period 1 April 2008 to 31 March 2009

Occupational bands	Male				Female				Total
	African	Coloured	Indian	White	African	Coloured	Indian	White	
Top management (Levels 15-16)	1	0	0	0	0	0	0	0	1
Senior management (Levels 13-14)	4	0	1	1	2	0	0	0	8
Professionally qualified and experienced specialists and mid-management (Levels 9-12)	7	0	0	2	10	0	0	2	21





5.5 – Terminations for the period 1 April 2008 to 31 March 2009

Occupational bands	Male				Female				Total
	African	Coloured	Indian	White	African	Coloured	Indian	White	
Skilled technical and academically qualified workers, junior management, supervisors, foreman and superintendents (Levels 6-8)	11	0	1	0	19	0	0	0	31
Semi-skilled and discretionary decision making (Levels 3-5)	1	0	0	0	1	0	0	0	2
Unskilled and defined decision making (Levels 1-2)	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>24</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>63</b>



## 6. Performance rewards

6.1 – Performance rewards by race, gender, and disability					
	Beneficiary profile			Cost	
	Number of beneficiaries	Total number of employees in group	% of total within group	Cost ('000)	Average cost per employee ('000)
<b>African</b>					
Male	71	108	65.74%	1660	23
Female	113	160	70.63%	4005	35
<b>Asian</b>					
Male	6	7	85.71%	205	34
Female	7	8	87.50%	253	36
<b>Coloured</b>					
Male	5	9	55.56%	98	20
Female	7	15	46.67%	178	25
<b>White</b>					
Male	6	10	60.00%	285	48
Female	7	18	38.89%	245	35
Employees with a disability	7	8	100.00%	191	27
<b>Total</b>	<b>229</b>	<b>343</b>	<b>66.76%</b>	<b>7120</b>	<b>31</b>

### Performance agreements submitted: 30 September 2008

Number of employees	Number submitted	Number not submitted	Reasons for non-compliance
87	54	33	Reasons for non-compliance
			International assignments
			Newly appointed employees has three months to comply
			Non-compliance





6.2 – Performance rewards by salary bands for personnel below Senior Management Service

Salary bands	Beneficiary profile			Cost		
	Number of beneficiaries	Number of employees	% of total within salary bands	Total Cost (R'000)	Average cost per employee	Total cost as a % of the total personnel expenditure
<b>Lower skilled (Levels 1-2)</b>	0	0	0.00%	0.00	0.00	0.00%
Skilled (Levels 3-5)	8	11	72.73%	47.00	5.88	0.03%
Highly skilled production (Levels 6-8)	71	93	76.34%	917.00	12.92	0.63%
<b>Highly skilled supervision (Levels 9-12)</b>	109	152	71.71%	3533.00	32.41	2.44%
<b>Total</b>	<b>188</b>	<b>256</b>	<b>73.44%</b>	<b>4497.00</b>	<b>23.92</b>	<b>3.10%</b>

6.2 – Performance rewards by salary bands for personnel below Senior Management Service

Salary bands	Beneficiary profile			Cost		
	Number of beneficiaries	Number of employees	% of total within band	Total Cost (R'000)	Average cost per employee	Total cost as a % of the total personnel expenditure
<b>Band A</b>	27	60	45.00%	1491	27	1.03%
<b>Band B</b>	9	21	42.86%	628	33	0.43%
<b>Band C</b>	4	5	80.00%	355	38	0.25%
<b>Band D</b>	1	1	100.00%	149	149	0.10%
<b>Total</b>	<b>41</b>	<b>87</b>	<b>47.13%</b>	<b>2623</b>	<b>62</b>	<b>1.81%</b>



## 7. Leave utilisation

The Public Service Commission identified the need for careful monitoring of sick leave within the Public Service. The following tables provide an indication of the use of sick leave (Table 7.1) and disability leave (Table 7.2). In both cases, the estimated cost of the leave is also provided.

7.1 – Sick leave, 1 January 2008 to 31 December 2008

Salary band	Total days	% days with medical certification	Number of Employees using sick leave	% of total employees using sick leave	Average days per employee	Estimated Cost (R'000)
Lower skilled (Levels 1-2)	0	0.00%	0	0.00%	0.00	0
Skilled (Levels 3-5)	47	3.91%	6	75.00%	7.83	12
Highly skilled production (Levels 6-8)	361	30.01%	68	74.73%	5.31	156
Highly skilled supervision (Levels 9-12)	526	43.72%	97	66.44%	5.42	530
Senior management (Levels 13-16)	269	22.36%	41	51.90%	6.56	357
<b>Total</b>	<b>1203</b>	<b>20.00%</b>	<b>212</b>	<b>65.43%</b>	<b>5.67</b>	<b>1055</b>

7.2 – Disability leave (temporary and permanent), 1 January 2008 to 31 December 2008

Salary band	Total days taken	% days with medical certification	Number of Employees using disability leave	% of total employees using disability leave	Average days per employee	Estimated Cost (R'000)
Lower skilled (Levels 1-2)	0	0%	0	0.00%	0	0
Skilled (Levels 3-5)	0	0%	0	0.00%	0	0
Highly skilled production (Levels 6-8)	48	100%	1	50.00%	48	27
Highly skilled supervision (Levels 9-12)	158	100%	1	50.00%	158	0
Senior management (Levels 13-16)	0	0%	0	0.00%	0	205
<b>Total</b>	<b>206</b>	<b>100%</b>	<b>2</b>	<b>0.31%</b>	<b>103</b>	<b>232</b>







Table 7.3 summarises the utilisation of annual leave. The wage agreement concluded with trade unions in the PSCBC in 2000 requires management of annual leave to prevent high levels of accrued leave being paid at the time of termination of service.

7.3 – Annual leave, 1 January 2008 to 31 December 2008		
Salary band	Number of days	Average days per employee
Lower skilled (Levels 1-2)	0	0.00
Skilled Levels 3-5)	206	20.60
Highly skilled production (Levels 6-8)	1969	22.63
Highly skilled supervision(Levels 9-12)	3339	22.11
Senior management (Levels 13-16)	1643	20.28
<b>Total</b>	<b>7157</b>	<b>21.75</b>

7.4 – Capped leave, 1 January 2008 to 31 December 2008			
Salary band	Total days of capped leave taken	Average number of days taken per employee	Average capped leave per employee as at 31 March 2006
Lower skilled (Levels 1-2)	0	0.00	0.00
Skilled Levels 3-5)	0	0.00	30.00
Highly skilled production (Levels 6-8)	0	0.00	36.53
Highly skilled supervision(Levels 9-12)	0	0.00	27.00
Senior management (Levels 13-16)	0	0.00	41.91
<b>Total</b>	<b>0</b>	<b>0.00</b>	<b>35.90</b>

The following table summarises payments made to employees as a result of leave that was not taken.

7.5 – Leave payouts for the period 1 April 2008 to 31 March 2009			
Reason	Total Amount (R'000)	Number of Employees	Average payment per employee ('000)
Leave payout for 2008/09 due to non-utilisation of leave for the previous cycle	256	29	8.83
Capped leave payouts on termination of service for 2008/09	135	2	65.5
Current leave payout on termination of service for 2008/09	489	16	31
<b>Total</b>	<b>880</b>	<b>47</b>	<b>18.72</b>



Training and development 2008/09				
Occupational categories	Number of employees as at 2008/09	Gender	Skills programme/short course	Learnership
Legislators	54	Male	21	0
	33	Female	15	0
Professionals	63	Male	42	0
	92	Female	49	0
Technicians	2	Male	1	0
	1	Female	0	0
Personal services	11	Male	3	0
	4	Female	1	0
Clerks and administrators	10	Male	0	0
	64	Female	26	0
Drivers	3	Male	0	0
	0	Female	0	0
Elementary workers	1	Male	1	0
	4	Female	1	0
SUBTOTAL	144	Male	68	0
	199	Female	92	0
<b>Total</b>	<b>343</b>		<b>160</b>	<b>0</b>

## 8. HIV and AIDS and health promotion programmes

8.1 – Details of health promotion and HIV and AIDS programmes (tick the applicable boxes and provide the required information)				
Question	Yes	No	Details, if yes	
1. Has the department designated a member of the SMS to implement the provisions contained in Part VI E of Chapter I of the Public Service Regulations, 2001? If so, provide her/his name and position.	✓		General Manager: Human Resource Mrs. Lerato Gumbi	
2. Does the department have a dedicated unit or has it designated specific staff members to promote the health and well being of your employees? If so, indicate the number of employees who are involved in this task and the annual budget that is available for this purpose.	✓		Special Programmes Unit: Three employees. The budget for the HIV and AIDS programme is located within the Special Programmes Unit. R1.4million	
3. Has the department introduced an Employee Assistance or Health Promotion Programme for your employees? If so, indicate the key elements/ services of this Programme.	✓		The Employee Health and Wellness Programme which focuses on: Wellness management, Health management and Occupational Health and Safety. The department has also appointed a service provider to provide Employee Wellness Programme services.	



8.1 – Details of health promotion and HIV and AIDS programmes (tick the applicable boxes and provide the required information)

Question	Yes	No	Details, if yes
4. Has the department established (a) committee(s) as contemplated in Part VI E.5 (e) of Chapter I of the Public Service Regulations, 2001? If so, please provide the names of the members of the committee and the stakeholder(s) that they represent.	✓		Healthcare and Wellness Support committee which consist of the core team and operational teams (inspection, first aiders, peer counsellors and fire fighters). 1. Sheila van Stryp (PSA Union rep) 2. Dorothy Leshaba (NEHAWU Union representative) 3. Vivienne Gondwe (Chairperson) 4. Loretta Pillay 5. Mirranda Mohapi (Deputy Chairperson) 6. George Seokane 7. Lydia Phasha 8. Siphive Mngomezulu 9. Anneline Morgan 10. Johannah Moima 11. Swasti Soomaroo 12. Moema Maponya 13. Azwifarwi Phuravhathu 14. Nomvula Lekubu 15. Phumelele Magubane
5. Has the department reviewed its employment policies and practices to ensure that these do not unfairly discriminate against employees on the basis of their HIV status? If so, list the employment policies/practices so reviewed.	✓		The Department has implemented an HIV and AIDS policy and an Employee Health and Wellness Programme policy, however these were not reviewed in the current year as they were recently reviewed.
6. Has the department introduced measures to protect HIV-positive employees or those perceived to be HIV-positive from discrimination? If so, list the key elements of these measures.	✓		The Department conducted HIV and AIDS related education and awareness.
7. Does the department encourage its employees to undergo Voluntary Counselling and Testing? If so, list the results that you have you achieved.	✓		The Department conducted four Voluntary Counselling and Testing (VCT) drives in the last financial year which amounted to 168 tests done.
8. Has the department developed measures/indicators to monitor & evaluate the impact of its health promotion programme? If so, list these measures/ indicators.	✓		The Department's programme has clear indicators which are monitored monthly and quarterly. Indicators: 1. The number of VCT's done and employees testing. 2. The percentage of employees seeking peer counselling. 3. The percentage of employees utilising the counselling services offered by the service provider with specific focus on HIV and AIDS. 4. The number of interventions done to raise awareness on HIV and participation levels in relation to number of planned.







## CORPORATE INFORMATION FOR ANNUAL REPORT

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### **Deputy Director-General: Research, Development and Innovation**

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Dr Thomas Auf de Heyde  
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### **Deputy Director-General: Human Capital and Knowledge Systems**

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Tel: 012 843 6717

### **Chief Operating Officer**

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### **Deputy Director-General: Socio-economic Partnerships**

Ms Marjorie Pyoos  
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### **Chief Financial Officer**

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Mr Charles Covane (Acting)  
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Mr Nhlanhla Nyide  
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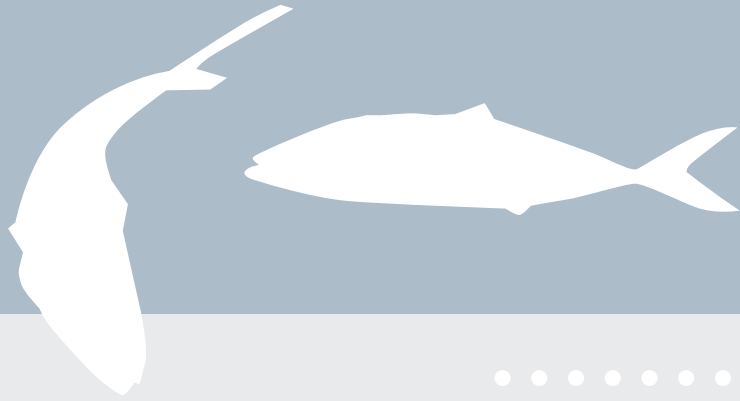




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