

Estimates of Public Expenditure

2009

Science and Technology

**National Treasury
Republic of South Africa**



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Vote 31

Science and Technology

Budget summary

R thousand	2009/10				2010/11	2011/12
	Total to be appropriated	Current payments	Transfers and subsidies	Payments for capital assets	Total	Total
MTEF allocation						
Administration	171 255	166 735	1 000	3 520	177 106	186 620
Research, Development and Innovation	1 142 883	43 539	1 099 119	225	1 315 478	1 383 163
International Cooperation and Resources	131 282	51 862	79 130	290	137 799	146 611
Human Capital and Knowledge Systems	1 598 038	29 082	1 568 856	100	1 795 824	2 018 078
Socioeconomic Partnerships	1 190 653	43 561	1 146 742	350	1 281 876	1 363 306
Total expenditure estimates	4 234 111	334 779	3 894 847	4 485	4 708 083	5 097 778
Executive authority	Minister of Science and Technology					
Accounting officer	Director-General of Science and Technology					
Website address	www.dst.gov.za					

Aim

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

Programme purposes

Programme 1: Administration

Purpose: Conduct the overall management of the department. Ensure that the organisations funded by the department comply with good corporate governance practices and that their activities are aligned with the strategic focus of the national system of innovation. Monitor and evaluate the performance of the science councils.

Programme 2: Research, Development and Innovation

Purpose: Provide policy leadership in long term and cross-cutting research and innovation in the national system of innovation. Play a key role in developing strategic new areas of focus for research and innovation in South Africa.

Programme 3: International Cooperation and Resources

Purpose: Develop and monitor bilateral and multilateral relationships and agreements in science and technology to strengthen the national system of innovation and enable a flow of knowledge, capacity and resources into South Africa and Africa.

Programme 4: Human Capital and Knowledge Systems

Purpose: Develop and implement national programmes to produce knowledge and develop human capital and the associated infrastructure, equipment and public research services.

Programme 5: Socioeconomic Partnerships

Purpose: Serve as a strategic partner within government and with industry, contributing to South Africa's transition to a knowledge economy.

Strategic overview: 2005/06 – 2011/12

The main focus of the Department of Science and Technology is on implementing the national research and development strategy. The strategy is implemented through an integrated approach that includes human resource development, knowledge generation, investment in science and technology infrastructure, and the strategic management of the public science and technology system.

Strategic and operational priorities

10-year innovation plan

In 2007, Cabinet approved the department's 10-year innovation plan. The plan provides strategic leadership and direction for modern science and technology in support of South Africa's socioeconomic goals, while remaining at the cutting edge of human and scientific endeavour and technological advancement. It aims to help drive South Africa's transformation towards a knowledge based economy, in which the production and dissemination of knowledge leads to economic benefits and enriches all fields of human endeavour. The plan's success will be measured by the extent to which science, technology and innovation play a role in improving productivity, economic growth and socioeconomic development.

The plan's framework provides the structure for the department to achieve its strategic goals, which are: to develop the innovation capacity of the science system; to develop appropriate human capital for research, development and innovation; and to position South Africa as a strategic international research, development and innovation partner and destination to enable the flow of knowledge and resources into the country.

A 10-year infrastructure plan is also being developed to guide investment in world class research, development and innovation infrastructure to improve the performance of the national system of innovation. The national system of innovation is a cluster or network of interacting public and private organisations focused on nurturing and developing science and technology in South Africa. The 10-year innovation plan also gives strategic guidance to all of these organisations.

Towards a knowledge driven economy

The department will continue to build on South Africa's existing science, technology and innovation resources to close the gap with countries that have been identified as knowledge driven economies. South Africa's historical dependence on resources and lack of proper intellectual property protection mechanisms has resulted in a failure to commercialise the results of scientific research and the inadequate production of knowledge workers capable of building a globally competitive economy. To counter this, the department will make a range of interventions, including: establishing the Technology Innovation Agency, expected to be launched in 2009; introducing legislation on intellectual property rights from publicly financed research and development; establishing the South African National Space Agency, expected to be launched by December 2009; and implementing the strategy on science, technology and engineering human capital development.

Regional and international cooperation

Regional and international cooperation continues to play a role in advancing science and technology through shared learning. Strategies include leading South Africa's engagement in the United Nations (UN) family of science organisations and maximising South African participation in major summits and international conventions, South-South partnerships, and international research programmes such as the European Union's (EU) framework programme of research.

Research and development

In 2005/06, the research development survey (a sample collection of data from public and private research and innovation institutions) showed that South Africa's gross expenditure on research and development for that year was just over R14.1 billion, which amounted to 0.92 per cent of GDP. The 2006/07 research and development survey reflected an increase to R16.5 billion for that year (0.95 per cent of GDP). The target is to achieve research and development expenditure in the national system of innovation of 1 per cent of GDP by 2008/09.

Infrastructure investment

In September 2006, South Africa and Australia were short listed as suitable sites to host the Square Kilometre Array radio telescope. The announcement of the successful bidding country is expected before the end of 2011. Both countries are building demonstration telescopes to develop the technology and optimise alignment with scientific research expectations. The South African demonstration telescope, the MeerKAT, will be constructed in two phases, and is expected to be fully assembled by 2012. As part of the development of the MeerKAT, South Africa has started a process to preserve the ideal radio astronomy conditions offered by the Karoo area, establish or upgrade infrastructure, and develop expertise in engineering and research.

The main purpose of the Centre for High Performance Computing, launched in May 2007, is to provide researchers with the computing power they need for sophisticated research and innovation. A primary node has been established in Cape Town. The second node will be established in Gauteng, following a feasibility study by the Department of Science and Technology and the Centre for High Performance Computing.

The first phase of the physical infrastructure for the South African National Research Network, a high speed network dedicated to research traffic and research into research networking and broadband infrastructures, reached a significant milestone when the first four research infrastructure sites went live in Johannesburg in March 2008. Other sites are currently being connected.

The South African Strategic Forum for Research Infrastructure will establish and maintain a database of records of South African research and development infrastructure. The national equipment programme supports research through acquiring state-of-the-art equipment for researchers and scientists to encourage innovative and competitive science. The national research information management system was launched in February 2008. This system will capture statistical information on government expenditure on research and development activities by universities and research institutions.

Managing the science and technology base

The 2004 governance framework for science and technology sets out key elements for proper management of the science and technology base. Having taken major steps to improve the funding of science and technology in the public sector, government has set up a comprehensive database to monitor scientific and technological activities. A review of how departments use funding for science to manage scientific and technological activities was initiated and will be published as an annual national science and technology expenditure report.

Selected performance and operations indicators**Table 31.1 Science and Technology**

Indicator	Programme	Past			Current	Projections		
		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Number of new technology based companies established as a result of products developed through research and development programmes	Research, Development and Innovation		5	8	12	15	20	30
Number of new patent applications resulting from publicly funded research	Research, Development and Innovation	–	–	–	30	40	50	65
Number of intellectual property transactions leading to commercialisation of technologies in South Africa each year	Research, Development and Innovation	–	–	–	10	15	17	25
Total number of space related technology services launched by South African based companies	Research, Development and Innovation	1	3	4	5	9	13	15

Table 31.1 Science and Technology (continued)

Indicator	Programme	Past			Current	Projections		
		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Total number of alternative energy technologies demonstrated and entering the local market	Research, Development and Innovation	1	3	5	6	9	14	18
Total number of technology commercialisation partnerships entered into with the private sector, including foreign direct investment	Research, Development and Innovation	–	–	–	1	5	7	10
Amount obtained from foreign sources for research and development each year	International Cooperation and Resources	R54m	R70m	R94.1m	R189m	R230m	R280m	R330m
Number of learners who attended the science week programme each year	Human Capital and Knowledge Systems	172 895	204 950	175 905	190 000	200 000	220 000	250 000
Number of honours and masters students on the innovative bursary programme each year	Human Capital and Knowledge Systems	–	–	280	415	470	550	281
Number of interns supported at science councils and higher education institutions each year	Human Capital and Knowledge Systems	–	49	68	100	300	320	340
Total number of centres of excellence established	Human Capital and Knowledge Systems	7	7	7	8	8	8	9
Total number of research chairs established at science councils and higher education institutions	Human Capital and Knowledge Systems	–	21	72	72	72	72	100
Number of PhDs and postdoctoral fellowships supported at science councils and higher education institutions each year	Human Capital and Knowledge Systems	–	113	107	155	180	200	258
Total number of joint science and technology projects initiated between the Department of Science and Technology and other departments	Socioeconomic Partnerships	–	2	6	10	10	12	12
Total number of flagship projects (including centres of competence) supporting strategic areas of research and development	Socioeconomic Partnerships	3	6	11	13	13	14	14
Number of companies provided with a technology assistance package to facilitate successful participation in infrastructure public procurement processes each year	Socioeconomic Partnerships and Research, Development and Innovation	–	–	–	–	24	24	24
Total number of institutions implementing the research information management system	Socioeconomic Partnerships	–	–	3	3	8	16	22

Expenditure estimates

Table 31.2 Science and Technology

Programme	Audited outcome			Adjusted appropriation	Revised estimate	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09		2009/10	2010/11	2011/12
R thousand								
1. Administration	107 342	226 042	119 188	115 086	115 086	171 255	177 106	186 620
2. Research, Development and Innovation	333 517	395 969	525 346	863 066	863 066	1 142 883	1 315 478	1 383 163
3. International Cooperation and Resources	77 635	124 304	99 433	130 838	130 838	131 282	137 799	146 611
4. Human Capital and Knowledge Systems	639 021	876 121	1 272 883	1 452 835	1 452 835	1 598 038	1 795 824	2 018 078
5. Socioeconomic Partnerships	883 757	990 563	1 110 430	1 159 890	1 159 890	1 190 653	1 281 876	1 363 306
Total	2 041 272	2 612 999	3 127 280	3 721 715	3 721 715	4 234 111	4 708 083	5 097 778
Change to 2008 Budget estimate				17 743	17 743	37 051	158 844	275 585

Table 31.2 Science and Technology (continued)

R thousand	Audited outcome			Adjusted appropriation	Revised estimate	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09		2009/10	2010/11	2011/12
Economic classification								
Current payments	173 497	174 004	211 000	242 852	242 852	334 779	351 436	370 376
Compensation of employees	65 125	83 743	104 075	135 889	135 889	192 819	204 182	215 921
Goods and services	108 343	90 173	106 843	106 963	106 963	141 960	147 254	154 455
<i>of which:</i>								
Administrative fees	2 311	1 041	1 224	5 808	5 808	644	669	705
Advertising	2 160	1 524	2 066	7 385	7 385	5 564	5 718	6 002
Assets less than R5 000	202	168	190	591	591	402	413	432
Audit costs: External	906	532	781	–	–	1 407	1 441	1 513
Bursaries: Employees	831	547	777	500	500	1 500	1 536	1 613
Catering: Departmental activities	1 007	729	1 245	1 310	1 310	2 520	2 623	2 751
Communication	6 546	5 609	7 038	5 216	5 216	7 933	8 229	8 633
Computer services	2 438	1 841	2 243	4 775	4 775	4 452	4 566	4 795
Consultants and professional services:	348	205	300	9 050	9 050	20 472	21 292	22 326
Business and advisory services								
Consultants and professional services:	–	–	–	852	852	–	–	–
Legal costs								
Contractors	2 199	1 396	1 844	645	645	5 376	5 450	5 715
Agency and support / outsourced services	35 780	30 229	33 807	27 330	27 330	23 108	24 197	25 351
Entertainment	383	872	939	1 548	1 548	1 122	1 167	1 223
Inventory: Fuel, oil and gas	432	258	373	317	317	–	–	–
Inventory: Materials and supplies	2 151	1 269	1 850	–	–	–	–	–
Inventory: Other consumables	11	18	21	671	671	–	–	–
Inventory: Stationery and printing	4 628	4 008	4 881	3 590	3 590	5 578	5 784	6 071
Lease payments	6 868	4 280	6 252	1 219	1 219	6 456	6 640	6 973
Owned and leasehold property expenditure	–	–	–	–	–	3 945	4 040	4 243
Travel and subsistence	30 685	27 659	31 664	28 007	28 007	36 977	38 441	40 323
Training and development	1 790	1 371	1 667	1 671	1 671	3 219	3 296	3 462
Operating expenditure	3 255	2 704	3 649	2 660	2 660	5 353	5 545	5 818
Venues and facilities	3 412	3 913	4 032	3 818	3 818	5 932	6 208	6 504
Financial transactions in assets and liabilities	29	88	82	–	–	–	–	–
Transfers and subsidies	1 865 086	2 293 388	2 908 359	3 476 728	3 476 728	3 894 847	4 353 429	4 724 032
Provinces and municipalities	193	64	–	–	–	–	–	–
Departmental agencies and accounts	809 189	1 160 159	1 516 928	1 910 632	1 910 632	2 033 707	2 304 148	2 542 612
Universities and technikons	32 274	45 972	45 817	18 309	18 309	–	–	–
Public corporations and private enterprises	596 981	740 719	1 023 212	879 070	879 070	581 052	614 022	650 646
Non-profit institutions	425 816	345 490	322 215	668 302	668 302	1 280 088	1 435 259	1 530 774
Households	633	984	187	415	415	–	–	–
Payments for capital assets	2 689	145 607	7 921	2 135	2 135	4 485	3 218	3 370
Buildings and other fixed structures	–	133 174	–	–	–	–	–	–
Machinery and equipment	2 689	12 433	7 921	2 135	2 135	4 485	3 218	3 370
Total	2 041 272	2 612 999	3 127 280	3 721 715	3 721 715	4 234 111	4 708 083	5 097 778

Expenditure trends

Expenditure increases at an average annual rate of 16.5 per cent between 2005/06 and 2011/12, rising from R2 billion in 2005/06 to R5.1 billion in 2011/12. Expenditure increases at an annual average rate of 22.2 per cent from 2005/06 to 2008/09 due to substantial additional allocations for projects in the *Research, Development and Innovation* programme, human capital development initiatives, and increases in funding for

organisations such as the South African Research Network and the National Research Foundation in the *Human Capital and Knowledge Systems* programme and the Council for Scientific and Industrial Research and the Human Sciences Research Council in the *Socioeconomic Partnerships* programme.

From 2008/09 to 2011/12, spending continues to grow at an average annual rate of 11.1 per cent as a result of additional allocations of R471.5 million. R200 million of this is for human capital development through the research chairs initiative and postgraduate bursaries (through the National Research Foundation), and R80 million for the new innovation planning and instruments programme. The rest is for inflation related adjustments in compensation of employees, capital assets and capital transfers.

Transfers make up the bulk of expenditure, amounting to R3.9 billion in 2009/10 or 92.9 per cent of the total budget.

Savings of R25.9 million in 2009/10, R37.2 million in 2010/11 and R40.4 million in 2011/12 have been identified in goods and services and in transfer payments to public entities.

Science and technology activities

Summary of expenditure on science and technology activities funded by the Department of Science and Technology

R thousand	2006/07	2007/08	2008/09	2009/2010	2010/2011	2011/2012
Scientific and technological services	405 777	614 828	571 338	599 988	635 987	665 878
Scientific and technical education and training	24 482	35 300	49 828	61 548	65 241	68 307
Scientific and technological innovation	1 830 266	2 279 254	2 781 818	3 159 576	3 349 152	3 506 561
Total science and technology activities	2 260 525	2 929 382	3 402 984	3 821 112	4 050 380	4 240 746

Public institutions that undertake scientific and technology activities and report to the Department of Science and Technology

R thousand	2006/07	2007/08	2008/09	2009/2010	2010/2011	2011/2012
National Advisory Council on Innovation	9 132	9 757	10 351	11 949	12 666	13 261
Academy of Science of South Africa	3 000	3 400	3 820	4 243	4 234	4 442
Africa Institute of South Africa	28 879	26 530	27 830	27 122	28 749	30 100
Human Science Research Council	119 873	115 949	160 706	157 858	167 329	175 193
National Research Foundation	586 671	648 394	680 832	680 396	721 220	755 117
Council for Scientific and Industrial research	483 194	507 352	534 749	561 487	595 176	623 149
South African National Energy Research Institute	40 000	42 000	44 268	-	-	-
Total	1 270 749	1 353 382	1 462 556	1 443 055	1 529 374	1 601 262

Departmental receipts

The department's receipts include miscellaneous items such as debt repayments and recovered private telephone costs. The receipts for the medium term are expected to increase marginally.

Table 31.3 Departmental receipts

R thousand	Audited outcome			Adjusted estimate	Revised estimate	Medium-term receipts estimate		
	2005/06	2006/07	2007/08	2008/09		2009/10	2010/11	2011/12
Departmental receipts	229	1 029	219	106	106	107	111	112
Sales of goods and services produced by department	43	301	24	25	25	25	26	26
Interest, dividends and rent on land	-	-	6	6	6	6	7	7
Sales of capital assets	-	57	110	-	-	-	-	-
Financial transactions in assets and liabilities	186	671	79	75	75	76	78	79
Total	229	1 029	219	106	106	107	111	112

Programme 1: Administration

Administration ensures that the organisations funded by the department are aligned with the strategic focus of the national system of innovation. It also monitors and evaluates the performance of the science councils. The *Property Management* subprogramme administers the property management funds and activities.

Expenditure estimates

Table 31.4 Administration

Subprogramme	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
R thousand							
Minister ¹	933	1 038	1 107	1 612	1 709	1 811	1 913
Deputy Minister ¹	776	865	949	1 328	1 407	1 492	1 575
Management	12 369	13 289	11 297	15 182	50 246	53 034	55 811
Corporate Services	88 329	206 364	97 727	89 131	105 079	106 899	112 681
Governance	2 416	2 636	3 801	4 686	9 519	10 061	10 602
Property Management	2 519	1 850	4 307	3 147	3 295	3 809	4 038
Total	107 342	226 042	119 188	115 086	171 255	177 106	186 620
Change to 2008 Budget estimate				(198)	37 486	32 841	33 699

1. From 2008/09, the current payments relating to the total remuneration package of political office bearers are shown, before this, only salary and car allowance are included. Administrative and other subprogramme expenditure may in addition include payments for capital assets as well as transfers and subsidies.

Economic classification

	102 884	79 336	108 802	110 159	166 735	173 903	183 313
Current payments							
Compensation of employees	31 709	37 465	47 412	63 012	94 441	99 939	105 635
Goods and services	71 146	41 783	61 308	47 147	72 294	73 964	77 678
<i>of which:</i>							
Administrative fees	950	558	819	5 766	254	259	273
Advertising	1 438	844	1 239	6 102	4 864	4 981	5 232
Assets less than R5 000	116	67	99	364	372	381	400
Audit costs: External	906	532	781	–	1 407	1 441	1 513
Bursaries: Employees	739	434	637	500	1 500	1 536	1 613
Catering: Departmental activities	400	235	345	340	1 033	1 058	1 111
Communication	4 316	2 535	3 719	2 266	4 202	4 303	4 520
Computer services	1 474	866	1 270	4 228	4 205	4 306	4 523
Consultants and professional services: Business and advisory services	348	205	300	150	8 748	8 958	9 409
Consultants and professional services: Legal costs	–	–	–	42	–	–	–
Contractors	2 103	1 235	1 812	559	4 957	5 009	5 252
Agency and support / outsourced services	28 953	17 004	24 950	11 124	4 037	4 134	4 342
Entertainment	265	155	228	317	494	506	531
Inventory: Fuel, oil and gas	432	254	372	105	–	–	–
Inventory: Materials and supplies	2 147	1 261	1 850	–	–	–	–
Inventory: Other consumables	10	6	9	646	–	–	–
Inventory: Stationery and printing	3 059	1 797	2 636	1 092	3 027	3 100	3 256
Lease payments	6 359	3 735	5 480	598	5 405	5 535	5 814
Owned and leasehold property expenditure	–	–	–	–	3 945	4 040	4 243
Travel and subsistence	12 538	7 363	10 804	8 980	16 345	16 738	17 581
Training and development	1 497	879	1 290	1 551	3 219	3 296	3 462
Operating expenditure	2 214	1 300	1 908	1 813	3 113	3 188	3 348
Venues and facilities	882	518	760	604	1 167	1 195	1 255
Financial transactions in assets and liabilities	29	88	82	–	–	–	–

Table 31.4 Administration (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Economic classification							
Transfers and subsidies	2 930	2 619	3 548	3 447	1 000	1 000	1 000
Provinces and municipalities	87	28	-	-	-	-	-
Departmental agencies and accounts	427	-	-	-	-	-	-
Universities and technikons	-	-	446	-	-	-	-
Public corporations and private enterprises	8	-	-	-	-	-	-
Non-profit institutions	2 280	2 060	2 967	3 235	1 000	1 000	1 000
Households	128	531	135	212	-	-	-
Payments for capital assets	1 528	144 087	6 838	1 480	3 520	2 203	2 307
Buildings and other fixed structures	-	133 174	-	-	-	-	-
Machinery and equipment	1 528	10 913	6 838	1 480	3 520	2 203	2 307
Total	107 342	226 042	119 188	115 086	171 255	177 106	186 620
Details of transfers and subsidies							
Provinces and municipalities							
Municipalities							
Municipal bank accounts							
Current	87	28	-	-	-	-	-
Regional Services Council levies	87	28	-	-	-	-	-
Departmental agencies and accounts							
Departmental agencies (non-business entities)							
Current	427	-	-	-	-	-	-
Gifts and donations	427	-	-	-	-	-	-
Universities and technikons							
Current	-	-	446	-	-	-	-
Institutional and programme support	-	-	446	-	-	-	-
Public corporations and private enterprises							
Private enterprises							
Other transfers							
Current	8	-	-	-	-	-	-
Gifts and donations	8	-	-	-	-	-	-
Non-profit institutions							
Current	2 280	2 060	2 967	3 235	1 000	1 000	1 000
Institutional and programme support	-	-	550	920	1 000	1 000	1 000
Technology Top 100	2 280	2 060	2 417	2 315	-	-	-
Households							
Other transfers to households							
Current	128	531	135	212	-	-	-
Gifts and donations	128	531	135	212	-	-	-

Expenditure trends

Expenditure increases from R107.3 million in 2005/06 to R115.1 million in 2008/09 at an average annual rate of 2.3 per cent. The marginal growth in this period is related to the decrease in expenditure on agency and outsourced services, which decreases from R29 million in 2005/06 to R11.1 million in 2008/09 at an average annual rate of 27.4 per cent, and the decrease in expenditure on lease payments and travel and subsistence. The decrease in growth in the goods and services budget has been off set by the increase in expenditure in

compensation of employees, which grew at an average annual rate of 25.7 per cent from R31.7 million in 2005/06 to R63 million in 2008/09.

Spending is anticipated to increase to R186.6 million in 2011/12, at an average annual rate of 17.5 per cent over the MTEF period. Growth is due to increases in compensation of employees and associated goods and services and travel and subsistence because the department's staff complement is expected to increase from 375 to approximately 569 over the medium term.

Programme 2: Research, Development and Innovation

- *Space Science* focuses on creating the necessary strategic and institutional regimes for creating and developing a viable space programme and earth observation system. This includes large scale astronomy facilities in the Northern Cape, and other national space initiatives aimed at harnessing the benefits of space science and technology for socioeconomic growth and sustainable development. The name of this subprogramme has been shortened from *Space Science, Engineering and Technology*.
- *Hydrogen and Energy* provides policy leadership in long term and cross-cutting research, development and innovation in the energy sector. The subprogramme plays a key role in developing a sustainable and globally competitive South African energy knowledge base and industry that will ensure broader socioeconomic benefits for the country from the nascent global hydrogen economy.
- *Biotechnology and Health* provides policy leadership for the development of a world class bioeconomy in South Africa. This will be achieved through the innovation instruments that provide financial, intellectual property and innovation management support.
- *Innovation Planning and Instruments* drives strategic interventions that will enable South Africa to translate a greater proportion of its scientific knowledge outputs into commercial technology products and services. This is achieved through the design and creation of policy and institutional structures that facilitate technology development and its progression into national and international markets.

Funding for all these subprogrammes is allocated on the basis of approved business plans and service level agreements between the department and the relevant entities. Following structure changes, the *National Advisory Council on Innovation* subprogramme has been moved to the *Administration* programme.

Objectives and measures

- Promote technology commercialisation by protecting and commercialising intellectual property to increase the number of South African technology based companies by establishing and operationalising the Technology Innovation Agency, centres of competence, the National Intellectual Property Management Office and the South African National Space Agency by March 2009.
- Position South Africa to host the Square Kilometre Array project by constructing the demonstration telescope MeerKAT by 2012.
- Ensure that South Africa's manufacturing sector benefits from supply opportunities from the South Africa Square Kilometre Array bid by developing a strategic framework for innovation and manufacturing by 2010.
- Support the creation of a viable space industry in South Africa by establishing a space agency by December 2009.
- Reduce the disease burden in South Africa by:
 - establishing 4 centres of competence for research and development on tuberculosis, malaria, HIV and AIDS and improved medical devices in 2009/10
 - producing at least 2 new products and services per year from 2010.
- Support the successful commercialisation of the Joule electric vehicle by demonstrating at least 2 new alternative energy technologies in 2009 in partnership with the Department of Trade and Industry.

Service delivery and spending focus

The 2008 national space strategy aims to strengthen better decision making by integrating space based and ground based information systems and to use space science and technology to develop applications for providing geospatial, telecommunications, and timing and positioning products and services. An interim space agency office was established at the Council for Scientific and Industrial Research in 2008. The 2008 Astronomy Geographic Advantage Bill aims to preserve the South African geographic advantage (climate and clear skies) for astronomy research infrastructure. A micro satellite, SumbandilaSAT, will be launched in 2009.

The 2008 hydrogen and fuel cell technologies research, development and innovation strategy aims to stimulate the development of platinum group metals based industries to supply the future global hydrogen economy. Platinum group metals are key catalytic materials in producing hydrogen and converting hydrogen to electricity. A working prototype of South Africa's electric vehicle, the Joule, was launched in Cape Town and exhibited at the Paris motor show in October 2008.

The Technology Innovation Agency Act (2008) provides for an agency that will give both financial and non-financial support to technology commercialisation in South Africa. The Intellectual Property Rights on Publicly Financed Research and Development Act (2008) provides for the more effective use of intellectual property derived from publicly financed research and development, and establishes the National Intellectual Property Management Office, the Intellectual Property Fund, and offices of technology transfer at public research institutions.

Expenditure estimates

Table 31.5 Research, Development and Innovation

Subprogramme	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
R thousand							
Space Science	153 764	204 237	296 157	341 428	574 271	638 369	688 183
Hydrogen and Energy	20 969	9 587	29 320	286 319	149 856	134 261	142 881
Biotechnology and Health	158 075	178 114	194 164	228 952	259 191	314 538	291 972
Innovation Planning and Instruments	709	4 031	5 705	6 367	159 565	228 310	260 127
Total	333 517	395 969	525 346	863 066	1 142 883	1 315 478	1 383 163
Change to 2008 Budget estimate				998	15 743	100 600	95 392

Economic classification

Current payments	11 460	13 493	16 065	34 973	43 539	45 962	48 354
Compensation of employees	4 770	5 805	8 824	11 564	20 829	22 071	23 340
Goods and services	6 690	7 688	7 241	23 409	22 710	23 891	25 014
<i>of which:</i>							
<i>Administrative fees</i>	145	167	157	12	80	84	88
<i>Advertising</i>	272	312	294	173	150	158	165
<i>Assets less than R5 000</i>	21	25	24	29	13	14	14
<i>Bursaries: Employees</i>	45	52	49	–	–	–	–
<i>Catering: Departmental activities</i>	55	63	59	135	246	259	271
<i>Communication</i>	429	493	464	423	765	805	843
<i>Computer services</i>	165	190	179	15	70	74	77
<i>Consultants and professional services: Business and advisory services</i>	–	–	–	4 554	2 002	2 106	2 205
<i>Consultants and professional services: Legal costs</i>	–	–	–	70	–	–	–
<i>Contractors</i>	1	1	1	7	120	126	132
<i>Agency and support / outsourced services</i>	843	968	912	12 801	13 991	14 719	15 410
<i>Entertainment</i>	93	107	101	329	41	43	45
<i>Inventory: Stationery and printing</i>	293	337	317	576	713	750	785
<i>Lease payments</i>	91	104	98	70	60	63	66
<i>Travel and subsistence</i>	3 437	3 950	3 720	3 450	4 120	4 334	4 538
<i>Training and development</i>	256	294	277	–	–	–	–
<i>Operating expenditure</i>	46	53	50	583	129	136	142
<i>Venues and facilities</i>	498	572	539	182	210	221	231

Table 31.5 Research, Development and Innovation (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Economic classification							
Transfers and subsidies	321 467	382 038	508 888	827 900	1 099 119	1 269 279	1 334 561
Provinces and municipalities	23	17	–	–	–	–	–
Departmental agencies and accounts	42 149	151 000	302 962	375 365	218 107	259 600	274 582
Universities and technikons	20 929	27 324	14 814	10 100	–	–	–
Public corporations and private enterprises	125	30 254	46 682	21 565	–	–	–
Non-profit institutions	258 041	173 191	144 426	420 754	881 012	1 009 679	1 059 979
Households	200	252	4	116	–	–	–
Payments for capital assets	590	438	393	193	225	237	248
Machinery and equipment	590	438	393	193	225	237	248
Total	333 517	395 969	525 346	863 066	1 142 883	1 315 478	1 383 163
Details of transfers and subsidies							
Provinces and municipalities							
Municipalities							
Municipal bank accounts							
Current	23	17	–	–	–	–	–
Regional Services Council levies	23	17	–	–	–	–	–
Departmental agencies and accounts							
Departmental agencies (non-business entities)							
Current	42 149	151 000	222 962	210 365	218 107	259 600	274 582
Biotechnology strategy	–	–	37 500	–	–	–	–
Gifts and donations	75	–	–	–	–	–	–
Health innovation	–	–	65	–	–	–	–
HIV/ AIDS prevention and treatment technologies	20 000	–	8 067	16 601	17 228	18 206	19 298
Innovation Fund	–	131 260	141 818	140 000	151 229	189 518	200 889
Institutional and programme support	1 000	100	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	–	–	10 000	–	9 930	9 900	9 900
Energy Grand Challenge	–	–	–	23 268	39 720	41 976	44 495
Space science	13 074	205	–	5 000	–	–	–
Square Kilometer Array	8 000	19 435	25 512	25 496	–	–	–
Capital	–	–	80 000	165 000	–	–	–
Square Kilometer Array	–	–	80 000	165 000	–	–	–
Universities and technikons							
Current	20 929	18 038	8 914	10 100	–	–	–
Biotechnology strategy	200	–	–	100	–	–	–
Health innovation	–	5 334	192	–	–	–	–
Hydrogen strategy	–	6 000	6 000	–	–	–	–
Institutional and programme support	529	885	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	–	–	–	10 000	–	–	–
Space science	20 200	5 819	2 722	–	–	–	–
Capital	–	9 286	5 900	–	–	–	–
Hydrogen strategy	–	–	3 000	–	–	–	–
Space science	–	9 286	2 900	–	–	–	–

Table 31.5 Research, Development and Innovation (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Details of transfers and subsidies							
Public corporations and private enterprises							
Public corporations							
Other transfers							
Current	125	21 540	25 582	7 465	-	-	-
Gifts and donations	11	-	-	-	-	-	-
Health innovation	-	-	2 500	-	-	-	-
Hydrogen strategy	-	4 000	4 650	5 000	-	-	-
Innovation projects	-	3 190	-	-	-	-	-
Innovation projects	-	-	4 600	-	-	-	-
Institutional and programme support	114	-	-	-	-	-	-
Space science	-	14 350	13 832	2 415	-	-	-
Biotechnology strategy	-	-	-	50	-	-	-
Capital	-	8 714	21 100	14 100	-	-	-
Hydrogen strategy	-	-	4 000	-	-	-	-
Space science	-	8 714	17 100	14 100	-	-	-
Non-profit institutions							
Current	258 041	171 191	141 426	280 090	310 087	374 270	377 297
Biofuels	-	-	-	5 000	5 000	5 000	5 300
Biotechnology strategy	154 650	148 080	124 222	175 357	180 000	231 645	205 342
Health innovation	-	4 000	6 242	18 500	36 000	37 872	39 652
HIV/ AIDS prevention and treatment technologies	-	15 000	-	-	-	-	-
Hydrogen strategy	-	-	9 926	38 558	51 168	28 638	30 356
Innovation fund	101 597	-	-	-	-	-	-
Innovation projects	-	-	-	-	-	30 000	50 000
Institutional and programme support	1 794	937	-	-	-	-	-
Space science	-	3 174	1 036	21 675	25 919	28 491	33 430
Square Kilometer Array	-	-	-	-	12 000	12 624	13 217
Energy Grand Challenge	-	-	-	21 000	-	-	-
Capital	-	2 000	3 000	140 664	570 925	635 409	682 682
Hydrogen strategy	-	-	3 000	40 500	44 229	48 361	51 903
Space science	-	2 000	-	900	36 403	51 390	55 153
Square Kilometer Array	-	-	-	99 264	490 293	535 658	575 626
Households							
Other transfers to households							
Current	200	252	4	116	-	-	-
Gifts and donations	200	252	4	116	-	-	-

Expenditure trends

Expenditure increased from R333.5 million in 2005/06 to R863.1 million in 2008/09 at an average annual rate of 37.3 per cent. The programme budget is dominated by current and capital transfers and subsidies to departmental agencies and non-profit institutions, which increase at an average annual rate of 37.1 per cent from R321.5 million in 2005/06 to R827.9 million in 2008/09. The increases are due to additional allocations for research projects and programmes that were funded at a much larger scale than before, and the introduction of the Square Kilometre Array.

Over the medium term, the programme's budget grows at an average annual rate of 17 per cent to R1.4 billion in 2011/12. Increased expenditure is due to implementing the 10-year innovation plan, and includes an additional R80 million allocated to the *Innovation Planning and Instruments* subprogramme. Spending in the *Space Science* subprogramme also grows significantly, rising to R688 million in 2011/12 to fund the establishment of the National Space Agency.

Programme 3: International Cooperation and Resources

- *Multilateral Cooperation and Africa* advances and facilitates South Africa's participation in strategic bilateral agreements and multilateral organisations on science, technology and innovation to strengthen the national system of innovation and to achieve shared economic and social development in the region and the continent. The name of this subprogramme has changed from *Multilaterals and Africa*.
- *International Resources* accesses funding from international donors, and human capital and knowledge, hosts global research infrastructure in South Africa, and promotes access to international research facilities for the benefit of the national system of innovation through bilateral agreements.
- *Overseas Bilateral Cooperation* promotes and facilitates collaborative activities and leverages resources in support of the national system of innovation from countries outside Africa, with a specific focus on developing a knowledge driven economy. Through the new international cooperation strategy, these relationships will be realigned to address the challenges and associated cross-cutting areas set out in the 10-year innovation plan and the national research and development strategy. The name of this subprogramme has changed from *Bilateral Cooperation*.

Funding for all three subprogrammes is allocated equally for salaries and associated personnel costs, and for transfers to public entities on the basis of approved business plans.

Objectives and measures

- Increase international funding for science and technology in South Africa by increasing international research funding, foreign investment and donor support, mostly through bilateral and multilateral agreements, from R189 million in 2008/09 to R352 million in 2011/12.
- Improve strategically aligned bilateral cooperation by initiating 60 new joint projects with international partners by March 2010.
- Increase and strengthen South African participation in multilateral organisations and forums by establishing 2 new global projects by March 2010 to support the department's 10-year innovation plan.
- Increase and strengthen cooperation in Africa by establishing 5 new bilateral projects or programmes by March 2010.
- Ensure the functioning of the 3 main African Initiatives for Capacity Development projects (training, research and knowledge brokerage) by implementing 5 pilot projects by March 2010.

Service delivery and spending focus

Joint research projects have been completed with several partners in 2008/09, including those within the India-Brazil-South Africa framework, in areas such as energy, space, ICT, biotechnology, advanced manufacturing and robotics. Flagship projects falling in this joint research projects category include Biota South, aimed at capacity development in mapping biodiversity, and Inkaba Ye Afrika, a multidisciplinary project that surveys a cone shaped sector of the earth from core to space.

South Africa's participation in the Organisation for Economic Cooperation and Development's committee for scientific and technological policy resulted in the finalisation of the peer review of the national system of innovation. South Africa won the bid to host the third component of the International Centre for Genetic Engineering and Biotechnology in Cape Town from 2007. The centre will provide research facilities for biotechnology in health related research activities and projects to combat diseases such as HIV and AIDS, hepatitis, rotavirus diarrhoea infections in children, malaria, tuberculosis and dengue fever. South Africa was awarded membership of the International Institute of Applied Systems Analysis, associate membership in the European Molecular Biology Conference, and executive membership of the Supporting Entrepreneurs for Sustainable Development during 2007/08.

Regional cooperation resulted in the signing of a Southern African Development Community (SADC) protocol on science, technology and innovation in August 2008, the establishment of a SADC science, technology and innovation desk in Gaborone, Botswana, and the appointment of a SADC representative at the United Nations Commission on Science and Technology for Development from January 2009.

The European Union allocated €30 million to address poverty, underdevelopment and marginalisation through scientific, engineering and innovation interventions. The Department of Science and Technology also signed agreements on the South Africa-Finland ICT knowledge partnership programme and the Finnish-Southern African partnership programme to strengthen the Southern Africa network for biosciences, thus enabling the network to advance life sciences research and development mainly in biodiversity, biotechnology and indigenous knowledge systems and technology.

Expenditure estimates

Table 31.6 International Cooperation and Resources

Subprogramme	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
R thousand							
Multilateral Cooperation and Africa	57 529	68 857	73 261	59 443	56 321	59 370	63 161
International Resources	9 517	27 285	10 048	39 189	50 516	52 639	56 340
Overseas Bilateral Cooperation	10 589	28 162	16 124	32 206	24 445	25 790	27 110
Total	77 635	124 304	99 433	130 838	131 282	137 799	146 611
Change to 2008 Budget estimate				1 523	(1 057)	(1 555)	(1 104)
Economic classification							
Current payments	31 777	42 005	40 134	43 528	51 862	54 771	57 654
Compensation of employees	13 411	17 401	19 849	25 206	27 785	29 442	31 135
Goods and services	18 366	24 604	20 285	18 322	24 077	25 329	26 519
<i>of which:</i>							
<i>Administrative fees</i>	1 130	197	119	5	62	65	68
<i>Advertising</i>	169	8	122	171	320	337	352
<i>Assets less than R5 000</i>	49	53	43	60	14	15	15
<i>Bursaries: Employees</i>	–	–	22	–	–	–	–
<i>Catering: Departmental activities</i>	379	189	578	559	570	600	628
<i>Communication</i>	843	1 282	1 420	1 321	1 282	1 349	1 412
<i>Computer services</i>	443	279	250	250	–	–	–
<i>Consultants and professional services: Business and advisory services</i>	–	–	–	–	750	789	826
<i>Contractors</i>	92	156	27	58	15	16	17
<i>Agency and support / outsourced services</i>	2 886	8 031	3 294	1 820	4 116	4 330	4 534
<i>Entertainment</i>	–	577	573	770	510	537	562
<i>Inventory: Fuel, oil and gas</i>	–	4	1	–	–	–	–
<i>Inventory: Materials and supplies</i>	4	8	–	–	–	–	–
<i>Inventory: Other consumables</i>	–	11	11	–	–	–	–
<i>Inventory: Stationery and printing</i>	537	954	860	1 311	590	621	650
<i>Lease payments</i>	213	168	369	373	390	410	430
<i>Travel and subsistence</i>	9 797	9 841	9 856	8 526	10 052	10 573	11 071
<i>Training and development</i>	–	154	47	–	–	–	–
<i>Operating expenditure</i>	322	534	728	206	1 547	1 627	1 704
<i>Venues and facilities</i>	1 502	2 158	1 965	2 892	3 859	4 060	4 250
Transfers and subsidies	45 395	81 791	59 014	87 156	79 130	82 723	88 638
Provinces and municipalities	37	11	–	–	–	–	–
Departmental agencies and accounts	25 324	29 564	27 349	30 759	29 280	30 594	32 440
Universities and technikons	1 855	3 188	4 526	1 409	–	–	–
Public corporations and private enterprises	10 173	28 692	22 749	21 127	–	–	–
Non-profit institutions	7 997	20 172	4 367	33 832	49 850	52 129	56 198
Households	9	164	23	29	–	–	–

Table 31.6 International Cooperation and Resources (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Economic classification							
Payments for capital assets	463	508	285	154	290	305	319
Machinery and equipment	463	508	285	154	290	305	319
Total	77 635	124 304	99 433	130 838	131 282	137 799	146 611
Details of transfers and subsidies							
Provinces and municipalities							
Municipalities							
Municipal bank accounts							
Current	37	11	-	-	-	-	-
Regional Services Council levies	37	11	-	-	-	-	-
Departmental agencies and accounts							
Departmental agencies (non-business entities)							
Current	25 324	29 564	27 349	30 759	29 280	30 594	32 440
Africa Institute of South Africa	18 968	24 954	26 530	30 464	29 280	30 594	32 440
Gifts and donations	156	-	-	-	-	-	-
Global Science: Bilateral cooperation	-	-	629	-	-	-	-
Global Science: International resources	-	-	190	295	-	-	-
Global Science: Multilaterals and Africa	6 200	4 610	-	-	-	-	-
Universities and technikons							
Current	1 855	3 188	4 526	1 409	-	-	-
Global Science: International resources	-	-	3 026	1 409	-	-	-
Global Science: Multilaterals and Africa	1 855	3 188	1 500	-	-	-	-
Public corporations and private enterprises							
Public corporations							
Other transfers							
Current	10 173	28 692	22 749	21 127	-	-	-
Global Science: Bilateral cooperation	-	-	500	6 616	-	-	-
Global Science: International resources	-	-	16 639	8 112	-	-	-
Global Science: Multilaterals and Africa	10 173	28 692	5 610	6 399	-	-	-
Non-profit institutions							
Current	7 997	20 172	4 367	33 832	49 850	52 129	56 198
Global Science: Bilateral cooperation	-	-	3 350	8 522	9 000	9 468	9 913
Global Science: International resources	-	-	227	18 506	30 500	31 502	34 093
Global Science: Multilaterals and Africa	7 997	20 172	790	6 804	10 350	11 159	12 192
Households							
Other transfers to households							
Current	9	164	23	29	-	-	-
Gifts and donations	9	164	23	29	-	-	-

Expenditure trends

Between 2005/06 and 2011/12, expenditure increased from R77.6 million to R146.6 million at an average annual rate of 11.2 per cent. Most of this growth occurred between 2005/06 and 2008/09, driven largely by an average annual increase of 60.3 per cent in the *International Resources* subprogramme and 44.9 per cent in the *Overseas Bilateral Cooperation* subprogramme. This was due to additional allocations to support multilateral and bilateral cooperation, especially the department's expanded involvement in the New Economic Partnership

for Africa's Development's African science and technology programme. Between 2008/09 and 2011/12, expenditure grows at a slower average annual rate of 3.9 per cent as the department aims to benefit from cross-border flows of knowledge, innovation, capacity and resources through increased international cooperation.

Programme 4: Human Capital and Knowledge Systems

- *Human Capital and Science Platforms* formulates and implements programmes that address the availability of human capital for science, technology and innovation. It ensures the production of new knowledge to build South Africa's knowledge resources. Funding is provided to institutions, such as the National Research Foundation, and programmes, such as human resource development and research chairs, on the basis of agreed business plans.
- *Indigenous Knowledge Systems* focuses on developing indigenous knowledge and integrating it into the national system of innovation by developing and integrating policy and undertaking strategic projects through the national indigenous knowledge systems office. Funding is largely for compensation of employees and associated goods and services expenditure.
- *Emerging Research Areas and Infrastructure* steers the advancement of novel and cross-cutting research areas and the establishment of world class research infrastructure in the national system of innovation. Funding is provided to institutions and programmes, such as the South African Research Network and the frontier science and technology programme, on the basis of approved business plans.

Objectives and measures

- Build human capital for research, development and innovation by developing an innovation enabling skills strategy to be approved by Cabinet by September 2009.
- Increase the number of researchers and the rate of knowledge production by placing 210 research chairs in the national system of innovation by 2010/11.
- Promote investment in human capital and knowledge production by:
 - increasing the number of centres of excellence from the current 7 to 9 by 2010
 - producing 3 000 science, engineering and technology PhDs a year by 2018.
- Provide a working research network by completing phase I of the South African National Research Network by adding Tshwane University of Technology to the existing connections.
- Improve the quality of research and redress imbalances by putting cutting edge equipment in at least 80 per cent of historically disadvantaged institutions by 2018.
- Foster industrial innovation and develop human capital in each of the identified platforms by identifying and supporting at least 2 emerging research areas by 2018.
- Promote the protection and development of indigenous knowledge systems by establishing a national bioprospecting platform, 2 research chairs, a national network of indigenous knowledge systems databases, 2 provincial nodes, and a bachelor's degree in indigenous knowledge systems by 2010.

Service delivery and spending focus

The research chairs initiative had awarded 72 research chairs in key areas aligned to government strategies by December 2008. Innovation bursaries were awarded to 280 postgraduate degree students in 2007 and 321 in 2008. In 2008, 86 per cent of these bursaries went to black students (83 per cent in 2007) and 56 per cent to female students (55 per cent in 2007). In 2008, 43 per cent of the bursaries were awarded in engineering and related fields. The innovation programme supported 54 postdoctoral fellows at various national system of innovation institutions.

The 7 existing centres of excellence continue to encourage cross-disciplinary and cross-institutional collaboration. 313 postgraduates have been trained in these centres, and 218 articles were published in peer reviewed journals by the end of 2007/08. The implementation of the youth into science strategy resulted in

125 unemployed science, engineering and technology graduates being deployed as volunteers at 22 centres countrywide.

The bursary funding for innovation competency students did not achieve the planned targets. 7 bursaries were awarded against a target of 30. Further bursaries will be awarded once a new, agreed curriculum is introduced by the Da Vinci Institute in 2010. The national indigenous knowledge systems office initiated 4 bioprospecting and product development flagship projects on traditional medicines, cosmeceuticals, nutraceuticals and ceramics, and registered a bachelor of indigenous knowledge systems degree with the South African Qualification Authority.

Expenditure estimates

Table 31.7 Human Capital and Knowledge Systems

Subprogramme	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
R thousand							
Human Capital and Science Platforms	631 443	751 937	943 641	1 061 176	1 117 727	1 280 069	1 458 399
Indigenous Knowledge Systems	5 277	8 382	10 508	11 889	25 240	27 242	29 125
Emerging Research Areas and Infrastructure	2 301	115 802	318 734	379 770	455 071	488 513	530 554
Total	639 021	876 121	1 272 883	1 452 835	1 598 038	1 795 824	2 018 078
Change to 2008 Budget estimate				2 561	(17 676)	25 311	141 334
Economic classification							
Current payments	16 486	17 934	21 352	23 887	29 082	30 755	32 524
Compensation of employees	9 682	10 206	11 869	16 002	20 944	22 192	23 516
Goods and services	6 804	7 728	9 483	7 885	8 138	8 563	9 008
<i>of which:</i>							
Administrative fees	37	42	51	25	55	60	63
Advertising	185	210	258	846	60	63	66
Assets less than R5 000	3	3	4	138	2	2	2
Bursaries: Employees	26	29	36	–	–	–	–
Catering: Departmental activities	68	77	95	104	411	432	455
Communication	474	539	661	570	723	761	800
Computer services	122	139	170	72	113	119	125
Consultants and professional services: Business and advisory services	–	–	–	–	597	628	661
Consultants and professional services: Legal costs	–	–	–	740	–	–	–
Contractors	1	1	1	8	222	234	246
Agency and support / outsourced services	1 460	1 658	2 035	785	521	548	577
Entertainment	15	17	21	101	26	27	29
Inventory: Other consumables	–	–	–	25	–	–	–
Inventory: Stationery and printing	553	628	771	387	1 026	1 079	1 135
Lease payments	110	125	154	20	160	168	177
Travel and subsistence	2 775	3 152	3 868	4 006	3 481	3 662	3 852
Training and development	34	39	48	–	–	–	–
Operating expenditure	556	631	773	58	534	562	591
Venues and facilities	385	438	537	–	207	218	229
Transfers and subsidies	622 522	857 900	1 251 468	1 428 794	1 568 856	1 764 964	1 985 444
Provinces and municipalities	30	3	–	–	–	–	–
Departmental agencies and accounts	564 047	774 932	936 105	1 105 775	1 276 216	1 456 333	1 644 158
Universities and technikons	4 761	6 529	8 270	3 300	–	–	–
Public corporations and private enterprises	22 748	47 146	259 852	229 030	–	–	–
Non-profit institutions	30 643	29 287	47 230	90 631	292 640	308 631	341 286
Households	293	3	11	58	–	–	–
Payments for capital assets	13	287	63	154	100	105	110
Machinery and equipment	13	287	63	154	100	105	110
Total	639 021	876 121	1 272 883	1 452 835	1 598 038	1 795 824	2 018 078

Table 31.7 Human Capital and Knowledge Systems (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Details of transfers and subsidies							
Provinces and municipalities							
Municipalities							
Municipal bank accounts							
Current	30	3	-	-	-	-	-
Regional Services Council levies	30	3	-	-	-	-	-
Departmental agencies and accounts							
Departmental agencies (non-business entities)							
Current	553 047	724 932	886 105	965 169	979 634	1 136 139	1 301 822
Frontier science and technology	8 896	35 000	20 500	-	-	-	-
Gifts and donations	31	-	-	-	-	-	-
Human resources development	12 600	55 000	169 429	260 180	281 180	377 583	489 139
Indigenous knowledge system	-	2 500	1 550	-	-	-	-
Learnerships	-	-	-	6 640	6 746	7 129	7 812
National Research Foundation	516 881	596 671	657 699	683 420	691 708	751 427	804 871
Science and youth	-	2 500	2 631	-	-	-	-
Science themes	14 639	33 261	34 296	14 929	-	-	-
Capital	11 000	50 000	50 000	140 606	296 582	320 194	342 336
Equipment placement	11 000	-	-	-	-	-	-
Research and development infrastructure	-	50 000	50 000	51 606	203 108	221 411	237 626
South African National Research Network	-	-	-	89 000	93 474	98 783	104 710
Universities and technikons							
Current	4 761	6 529	8 270	3 300	-	-	-
Frontier science and technology	3 400	682	-	-	-	-	-
Human resources development	-	1 000	6 352	-	-	-	-
Indigenous knowledge system	-	200	1 200	-	-	-	-
Science and youth	681	1 297	400	3 300	-	-	-
Science themes	680	3 350	18	-	-	-	-
Women in science	-	-	300	-	-	-	-
Public corporations and private enterprises							
Public corporations							
Other transfers							
Current	22 748	5 146	97 852	3 880	-	-	-
Frontier science and technology	12 362	402	83 000	-	-	-	-
Human resources development	-	-	9 590	3 530	-	-	-
Indigenous knowledge system	-	-	450	350	-	-	-
Learnerships	3 134	4 444	3 112	-	-	-	-
Science themes	7 252	300	1 700	-	-	-	-
Capital	-	42 000	162 000	225 150	-	-	-
Frontier science and technology	-	20 000	-	136 150	-	-	-
South African National Research Network	-	22 000	162 000	-	-	-	-
Research and development infrastructure	-	-	-	89 000	-	-	-
Non-profit institutions							
Current	30 643	29 287	47 230	82 281	261 321	268 671	297 039
Academies	2 500	3 000	3 400	5 570	9 893	10 554	11 152
Centre for High Performance Computing	-	-	-	-	61 349	70 397	80 123
Emerging research areas	-	-	-	-	59 811	51 603	57 121
Frontier science and technology	3 734	5 300	-	-	-	-	-
Human resources development	-	-	10 540	-	-	-	-
Indigenous knowledge system	3 500	790	1 000	4 420	15 938	17 407	18 726
Learnerships	1 866	-	-	-	-	-	-
Science and youth	15 900	16 438	24 978	42 288	52 325	55 911	61 265
Science themes	3 143	3 759	7 312	29 553	58 970	59 629	65 338
Women in science	-	-	-	450	435	435	450
Technology Top 100	-	-	-	-	2 600	2 735	2 864

Table 31.7 Human Capital and Knowledge Systems (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Details of transfers and subsidies							
Capital	-	-	-	8 350	31 319	39 960	44 247
Frontier science and technology	-	-	-	8 350	-	-	-
National nanotechnology centres	-	-	-	-	29 905	38 337	42 400
Centre for High Performance Computing	-	-	-	-	1 414	1 623	1 847
Households							
Other transfers to households							
Current	293	3	11	58	-	-	-
Gifts and donations	293	3	11	58	-	-	-

Expenditure trends

Expenditure increased at an average annual rate of 21.1 per cent from R639 million in 2005/06 to R2 billion in 2011/12. Expenditure has grown substantially in the past three years, increasing by approximately R200 million per year at an average annual rate of 31.5 per cent. This is driven by increased expenditure in the *Human Capital and Science Platforms* and *Emerging Research Areas and Infrastructure* subprogrammes in the form of transfers, particularly to the National Research Foundation and the South African Research Network. Over the medium term, the budget grows at a steady average annual rate of 11.6 per cent. This is driven by additional funding of R50 million for postgraduate bursaries and R150 million to the National Research Foundation for the research chair initiative.

Programme 5: Socioeconomic Partnerships

- *Science and Technology for Economic Impact* aims to realise government's strategic economic growth and sector development objectives through four major interventions or technology missions: ICT; advanced manufacturing; resource based industries; and climate change challenges.
- *Science and Technology for Social Impact* aims to introduce and promote innovative technology and management competencies to support the creation of sustainable job and wealth opportunities in poor municipal areas by focusing on sustainability and contributing to human settlement issues. The activities require interdepartmental cooperation and partnerships with science councils for extending scientific research and technology applications to address identified priorities in different sectors, as well as the millennium development goals. The subprogramme develops new innovations and technology based solutions to promote an integrated approach to service delivery and enhance capabilities in implementing community infrastructure projects.
- *Science and Technology Investment* leads and supports the development of science and technology indicators, monitors national science and technology expenditure and planning, and implements section 11D of the Income Tax Act (1962), which involves administering reporting by private companies on research and development claims against the tax allowance.

Funding for all three subprogrammes is dominated by transfers to a range of research and innovation entities and institutions, allocated on the strength of approved business plans.

Objectives and measures

- Develop new industries in ICT products and services, metals beneficiation, chemicals production and smart materials by initiating 1 research and development led intervention for each by 2009.
- Support the development of poverty alleviation and sustainable livelihoods policy and strategy by doing evidence based research on 3 priority topics by 2009.

- Contribute to improving government decision making on science and technology as productive investments by producing 2 evaluation reports on public funding for science and technology activities by December 2009.
- Increase the value of public sector procurement contracts accessed by local technology intensive companies through a focused technology localisation effort which provides assistance to at least 25 companies per year.

Service delivery and spending focus

The wireless mesh network project was taken to the next level by developing 3 large scale demonstrators. The global change science plan, which provides a clear indication of the key science and research work required to address the global climate change challenge, was finalised.

Building on the sector specific research and development studies conducted in 2007/08 and 2008/09, the department continued to support other government departments to develop their sector based research and development plans. This resulted in the approval of the national agricultural research and development strategy in 2008 and improved coordination and information sharing with other departments that have science and technology mandates.

The improved tax incentive to encourage spending on research and development received its first application in November 2007. The department focused on creating broad public awareness about the incentive and its requirements.

The department continues to monitor indicators for science, technology and innovation. In 2008/09, the national survey on research and experimental development was completed. The department facilitated the development of an integrated planning and development model, which includes a toolkit for integrated planning with an e-based planning platform. The model is aimed at improving the implementation of integrated community infrastructure, including housing, sanitation, transport, and the delivery of community services such as water, electricity, schools and clinics.

The digital doorway initiative is a computer based education platform for the youth. Over 200 instruments containing Wikipedia and over 10 000 books have been provided across South Africa, mainly in public libraries, community centres and schools. The instruments allow wireless communication and can run on solar power, enabling installation in remote rural areas. This is a joint initiative with the Council for Scientific and Industrial Research.

Expenditure estimates

Table 31.8 Socioeconomic Partnerships

Subprogramme	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
R thousand							
Science and Technology for Economic Impact	714 965	769 045	851 508	865 249	896 689	963 605	1 025 698
Science and Technology for Social Impact	166 106	216 047	254 076	271 920	269 962	291 752	309 558
Science and Technology Investment	2 686	5 471	4 846	22 721	24 002	26 519	28 050
Total	883 757	990 563	1 110 430	1 159 890	1 190 653	1 281 876	1 363 306
Change to 2008 Budget estimate				12 859	2 555	1 647	6 263
Economic classification							
Current payments	10 890	21 236	24 647	30 305	43 561	46 045	48 531
Compensation of employees	5 553	12 866	16 121	20 105	28 820	30 538	32 295
Goods and services	5 337	8 370	8 526	10 200	14 741	15 507	16 236
<i>of which:</i>							
Administrative fees	49	77	78	–	193	201	213
Advertising	96	150	153	93	170	179	187
Assets less than R5 000	13	20	20	–	1	1	1

Table 31.8 Socioeconomic Partnerships (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Economic classification							
Current payments	10 890	21 236	24 647	30 305	43 561	46 045	48 531
<i>Bursaries: Employees</i>	21	32	33	–	–	–	–
<i>Catering: Departmental activities</i>	105	165	168	172	260	274	286
<i>Communication</i>	484	760	774	636	961	1 011	1 058
<i>Computer services</i>	234	367	374	210	64	67	70
<i>Consultants and professional services: Business and advisory services</i>	–	–	–	4 346	8 375	8 811	9 225
<i>Contractors</i>	2	3	3	13	62	65	68
<i>Agency and support / outsourced services</i>	1 638	2 568	2 616	800	443	466	488
<i>Entertainment</i>	10	16	16	31	51	54	56
<i>Inventory: Fuel, oil and gas</i>	–	–	–	212	–	–	–
<i>Inventory: Other consumables</i>	1	1	1	–	–	–	–
<i>Inventory: Stationery and printing</i>	186	292	297	224	222	234	245
<i>Lease payments</i>	95	148	151	158	441	464	486
<i>Travel and subsistence</i>	2 138	3 353	3 416	3 045	2 979	3 134	3 281
<i>Training and development</i>	3	5	5	120	–	–	–
<i>Operating expenditure</i>	117	186	190	–	30	32	33
<i>Venues and facilities</i>	145	227	231	140	489	514	539
Transfers and subsidies	872 772	969 040	1 085 441	1 129 431	1 146 742	1 235 463	1 314 389
Provinces and municipalities	16	5	–	–	–	–	–
Departmental agencies and accounts	177 242	204 663	250 512	398 733	510 104	557 621	591 432
Universities and technikons	4 729	8 931	17 761	3 500	–	–	–
Public corporations and private enterprises	563 927	634 627	693 929	607 348	581 052	614 022	650 646
Non-profit institutions	126 855	120 780	123 225	119 850	55 586	63 820	72 311
Households	3	34	14	–	–	–	–
Payments for capital assets	95	287	342	154	350	368	386
Machinery and equipment	95	287	342	154	350	368	386
Total	883 757	990 563	1 110 430	1 159 890	1 190 653	1 281 876	1 363 306
Details of transfers and subsidies							
Provinces and municipalities							
Municipalities							
Municipal bank accounts							
Current	16	5	–	–	–	–	–
Regional Services Council levies	16	5	–	–	–	–	–
Departmental agencies and accounts							
Departmental agencies (non-business entities)							
Current	177 242	204 663	250 512	398 733	510 104	557 621	591 432
Advanced manufacturing technology strategy	–	–	–	48 000	47 664	51 480	54 569
Centres of excellence	20 000	–	–	–	–	–	–
Global change science and technology	–	–	–	17 000	22 839	31 680	33 581
Human and social development dynamics	–	–	–	26 500	23 335	38 090	40 634
Human Science Research Council	104 293	121 473	155 949	163 851	157 580	164 967	174 960
Information communication technology	–	13 000	16 000	–	–	–	–
Leveraging services strategy	–	1 739	–	–	–	–	–
Local manufacturing capacity	–	–	–	16 806	25 665	28 178	29 869
Local systems of innovation	–	–	–	1 512	7 758	8 604	9 120
National public assets	43 000	43 000	43 000	–	–	–	–
Natural resources and public assets	–	–	–	30 171	55 296	58 471	61 980
Quality of life nuclear technologies	–	–	–	5 000	4 965	5 940	6 296
Research information management system	–	–	–	14 000	9 930	5 940	6 296
Resource based industries	650	–	–	16 336	34 870	36 851	39 061

Table 31.8 Socioeconomic Partnerships (continued)

R thousand	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Details of transfers and subsidies							
Departmental agencies and accounts							
Departmental agencies (non-business entities)							
Current	177 242	204 663	250 512	398 733	510 104	557 621	591 432
Science and technology indicators	–	–	–	3 000	3 972	9 900	10 494
South African National Energy Research Institute	–	–	–	–	–	–	–
South African research chairs initiative for human sciences	–	–	–	18 500	21 349	18 315	19 414
Technology for poverty alleviation	1 479	6 151	23 963	17 660	25 588	28 140	29 828
Technology for sustainable livelihoods	1 350	–	300	20 397	32 856	32 455	34 403
Technology planning and diffusion	6 470	19 300	11 300	–	–	–	–
Tshumisano Trust	–	–	–	–	36 437	38 610	40 927
Universities and technikons							
Current	4 729	8 931	17 761	3 500	–	–	–
Biofuels	–	–	1 500	–	–	–	–
Information communication technology	282	–	–	–	–	–	–
Leveraging services strategy	–	633	–	–	–	–	–
South African National Energy Research Institute	500	–	–	–	–	–	–
Technology for poverty alleviation	1 500	–	8 961	–	–	–	–
Technology for sustainable livelihoods	2 447	8 298	7 300	3 100	–	–	–
Local systems of innovation	–	–	–	400	–	–	–
Public corporations and private enterprises							
Public corporations							
Other transfers							
Current	563 927	634 627	693 929	607 348	581 052	614 022	650 646
Advanced manufacturing technology strategy	41 515	41 800	47 706	–	–	–	–
Biofuels	–	–	3 000	–	–	–	–
Council for Scientific and Industrial Research	431 649	483 194	517 352	554 687	581 052	614 022	650 646
Council for Scientific and Industrial Research: National Laser Centre	18 000	–	–	–	–	–	–
Information communication technology	13 741	14 200	54 210	24 638	–	–	–
Resource based industries	15 050	24 208	22 200	13 365	–	–	–
Technology for poverty alleviation	7 921	20 098	–	6 000	–	–	–
Technology for sustainable livelihoods	31 051	44 702	45 035	8 658	–	–	–
Technology planning and diffusion	5 000	6 425	4 426	–	–	–	–
Non-profit institutions							
Current	126 855	120 780	123 225	119 850	55 586	63 820	72 311
Advanced manufacturing technology strategy	–	10 000	10 000	–	–	–	–
Biofuels	–	–	–	–	–	–	–
Information communication technology	–	–	–	45 339	55 586	63 820	72 311
Leveraging services strategy	–	628	–	–	–	–	–
National Energy Cooperation of South Africa: Fluoro chemicals	20 000	–	–	–	–	–	–
Resource based industries	4 380	5 458	5 365	3 500	–	–	–
South African National Energy Research Institute	19 500	40 000	42 000	–	–	–	–
Technology for poverty alleviation	2 000	8 986	7 000	–	–	–	–
Technology for sustainable livelihoods	12 151	–	405	–	–	–	–
Technology planning and diffusion	68 824	55 708	22 455	–	–	–	–
Tshumisano Trust	–	–	36 000	36 600	–	–	–
Local manufacturing capacity	–	–	–	6 750	–	–	–
Natural resources and public assets	–	–	–	22 661	–	–	–
Local systems of innovation	–	–	–	5 000	–	–	–
Households							
Other transfers to households							
Current	3	34	14	–	–	–	–
Gifts and donations	3	34	14	–	–	–	–

Expenditure trends

Expenditure increased from R883.8 million in 2005/06 to R1.4 billion in 2011/12, an average annual increase of 7.5 per cent. This growth is more evident in the *Science and Technology for Economic Impact* subprogramme, which accounts for 75.3 per cent of programme expenditure in 2009/10, signifying the strategic importance of supporting government's objective of poverty alleviation through creating sustainable job and wealth opportunities in poor municipal areas.

The programme has not received any additional funds for the medium term, resulting in an average annual growth rate of 5.5 per cent between 2008/09 and 2011/12.

Public entities

Council for Scientific and Industrial Research

Strategic overview: 2005/06 – 2011/12

Through directed and multidisciplinary research and technological innovation, the Council for Scientific and Industrial Research aims to foster industrial and scientific development. Established under the Scientific Research Council Act (1988), the council plays a particular role in the national system of innovation. It conducts activities across the research and innovation value chain, with a focus on directed research and development. The main purpose of the council is to use science, engineering and technology to make a difference to the wellbeing of South Africans by providing technology solutions to current social and industrial challenges.

The Council's 2005 revised organisational strategy is based on the following key strategic objectives: building and transforming human capital; strengthening the science, education and technology base; performing relevant research and development; and transferring technology and skilled human capital.

The council conducts multidisciplinary research on energy, health, the built environment, the natural environment, mining, defence, public safety, manufacturing, space and ICT. These research themes cut across its organisational units.

Selected performance and operations indicators

Table 31.9 Council for Scientific and Industrial Research

Indicator	Programme	Past			Current	Projections		
		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Total number of permanent staff studying towards masters or PhD degrees	Human capital development	–	–	90	95	115	130	150
Total number of bursaries granted for university study	Human capital development	–	–	134	150	178	208	238
Percentage of science, engineering and technology workers who are black	Human resource management	–	49%	52%	53%	55%	56%	56%
Total number of staff with PhD qualifications	Human resource management	197	237	234	240	255	270	285
Number of publications by staff each year	Science and technology outputs	177	220	343	346	366	386	406
Value of contract research and development formally recognised as supporting national strategies	Contract research and development	–	R274.3m	R373.5m	R375m	R400m	R 430.0 m	R455m
Number of new international patents granted	Research and development outcomes	4	12	21	15	18	22	18

Service delivery and spending focus

Research projects are under way to develop construction technologies for affordable, sustainable, high quality housing for middle to low income earners. The council is a key partner in a special project of the Western Cape Ministry of Housing for constructing 611 40 m², one-bedroomed houses in Kleinmond.

The council has embarked on a research programme to improve the performance of South Africa's road networks by developing a new advanced road pavement design platform for materials design, road pavement

structural design and accelerated pavement testing. This scientific approach to pavement design will lead to the construction of more durable roads with lower maintenance costs.

In partnership with various local and provincial governments, universities and other organisations, the council is involved in developing strategies for crime prevention.

The council's satellite technology has been applied successfully to provide input for decision making in a number of strategic areas, such as agro-environment, food security, ocean resources, water management, disaster management and mitigation, housing development, utilities and infrastructure planning, mining safety and national safety and security. In partnership with ESKOM, the council has developed a fire alert system which uses satellite imagery to spot fires that have the potential to damage the electricity distribution network.

The council's health research has led to the development of a herbal extract for the treatment of mild asthma, colds, influenza and sinus problems. The results have pointed to the mode of action through which this traditional remedy acts, and are the first scientific evidence that validates the traditional use of the plant for treating asthma.

Multidisciplinary research is conducted to support the effective management of water resources, including in virology, parasitology, bacteriology, biotoxicity, chemistry and health risk assessment.

The council also provides a host of specialised, recurring consulting services to the private and public sector, including on forensic fire investigation, mine rope testing, specialised chemical and analytical services and environmental analysis.

Expenditure estimates

Table 31.10 Council for Scientific and Industrial Research: Activity information

R thousand	Audited outcome			Revised estimate	Medium-term estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Defence, peace, safety and security	156 115	172 904	217 223	246 354	250 705	270 881	295 266
Materials science and manufacturing	114 261	131 171	146 418	162 539	165 410	178 722	194 810
Biosciences	93 503	97 758	126 681	131 517	133 840	144 611	157 629
Natural resources and the environment	206 959	187 977	181 183	193 875	197 299	213 177	232 367
Built environment	130 576	110 621	126 539	145 420	147 988	159 898	174 292
Other activities	278 811	460 258	445 215	561 775	567 541	599 245	624 153
Total expense	980 224	1 160 689	1 243 259	1 441 480	1 462 784	1 566 534	1 678 518

Table 31.11 Council for Scientific and Industrial Research: Financial information

R thousand	Audited outcome			Revised estimate	Medium-term estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Statement of financial performance							
Revenue							
Non-tax revenue	616 712	726 779	868 522	951 719	980 053	1 056 861	1 138 535
Sale of goods and services other than capital assets	581 602	660 587	776 908	877 675	917 831	1 000 209	1 087 218
<i>of which:</i>							
<i>Research revenue</i>	581 602	660 587	776 908	877 675	917 831	1 000 209	1 087 218
<i>Other non-tax revenue</i>	35 110	66 192	91 614	74 044	62 222	56 652	51 317
Transfers received	421 631	460 443	429 013	520 908	515 747	544 669	577 078
Total revenue	1 038 343	1 187 222	1 297 535	1 472 627	1 495 800	1 601 530	1 715 613
Expenses							
Current expense	980 217	1 160 586	1 243 394	1 441 480	1 462 784	1 566 534	1 678 518
Compensation of employees	541 786	592 828	628 319	725 586	784 724	843 125	905 516
Goods and services	380 794	510 700	580 593	640 809	593 209	630 478	670 809
Depreciation	40 239	50 682	28 061	75 085	84 851	92 931	102 193
Interest, dividends and rent on land	17 398	6 376	6 421	–	–	–	–
Total expenses	980 224	1 160 689	1 243 259	1 441 480	1 462 784	1 566 534	1 678 518
Surplus / (Deficit)	58 119	26 533	54 276	31 147	33 016	34 996	37 095

Table 31.11 Council for Scientific and Industrial Research: Financial information (continued)

R thousand	Audited outcome			Revised estimate	Medium-term estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Statement of financial position							
Carrying value of assets	300 139	219 135	225 429	345 463	349 579	363 708	379 281
<i>of which: Acquisition of assets</i>	119 734	66 443	41 794	195 119	88 967	107 060	117 766
Investments	17 842	200 000	–	–	–	–	–
Inventory	46 866	43 203	61 712	57 999	42 691	58 544	64 398
Receivables and prepayments	159 980	146 906	267 076	209 102	237 591	268 136	299 423
Cash and cash equivalents	294 011	379 243	691 476	584 237	576 826	588 581	647 439
Assets not classified elsewhere	–	95 070	94 890	–	–	–	–
Total assets	818 838	1 083 557	1 340 583	1 196 801	1 206 687	1 278 969	1 390 541
Accumulated surplus / deficit	319 929	347 716	392 732	423 879	456 895	491 891	528 986
Post-retirement benefits	14 897	12 751	8 595	5 580	1 806	–	–
Trade and other payables	387 413	623 750	819 549	684 236	657 816	689 244	755 405
Provisions	65 300	72 248	76 595	83 106	90 170	97 834	106 150
Liabilities not classified elsewhere	31 299	27 092	43 112	–	–	–	–
Total equity and liabilities	818 838	1 083 557	1 340 583	1 196 801	1 206 687	1 278 969	1 390 541

Expenditure trends

The Council for Scientific and Industrial Research is funded by transfers (as a core grant) by the Department of Science and Technology as well as ringfenced allocations, and generates about 62 per cent of its total revenue from research and development contract income. Allocations over the MTEF period are R592 million, R627 million and R664 million (including value added tax). Over and above the MTEF allocations, the council receives additional (ringfenced) allocations of R73 million, R80 million and R84 million over the same period, reflecting an average annual increase of 4.6 per cent.

Over the medium term, the council's estimated revenue is set to grow at an average annual rate of 5.2 per cent from R1.5 billion in 2008/09 to R1.7 billion in 2011/12.

National Research Foundation

Strategic overview: 2005/06 – 2011/12

The National Research Foundation was established in line with the National Research Foundation Act (1998). The foundation is responsible for promoting and supporting research in all fields of the humanities, the social and natural sciences, engineering and technology. It serves as a catalyst for stimulating both fundamental and applied research for a broader knowledge economy by supporting knowledge production and highly skilled human capital needs and providing critical science platforms.

In accordance with the legislation, the National Research Foundation performs an agency function on behalf of the Department of Science and Technology, and is a service provider to all government departments. The clustered activities of the foundation include: research innovation support and advancement; national research facilities; astro, space and geosciences; biodiversity and conservation; and nuclear sciences.

In 2007/08, the foundation developed a new strategic plan reaching to 2015. The plan recognises the following high level strategic goals, aimed at contributing to a prosperous and sustainable continent: an internationally competitive science, technology and innovation system; a representative research and technical workforce; world class science benchmarking and granting systems; leading edge research, technology and innovation platforms; and a vibrant national system of innovation.

Medium term priorities are to increase student bursary values and establish a stable funding base in order to recapitalise equipment and the national research facilities' infrastructure.

Selected performance and operations indicators

Table 31.12 National Research Foundation

Indicator	Past			Current	Projections		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Number of honours students supported each year	662	687	274	715	772	834	884
Number of masters students supported each year	2 003	2 496	1 954	2 329	2 505	2 706	2 868
Numbers of PhD students supported each year	1 179	1 417	1 098	1 293	1 396	1 508	1 598
Number of black researchers supported each year	473	494	497	427	469	517	548
Number of female researchers supported each year	600	670	681	500	549	605	641
Number of researchers supported each year	1 617	1 680	1 716	916	1 006	1 108	1 175
Number of masters and PhD students supervised by National Research Foundation staff each year	146	167	203	261	313	391	415
Number of peer reviewed publications by researchers funded through the Research and Innovation Support Agency each year	3 024	2 534	3 030	3 273	3 437	3 609	3 825
Number of refereed journal articles by National Research Foundation staff each year	119	164	264	175	186	197	209

Service delivery and spending focus

The National Research Foundation has established a separate business unit to manage the activities of the Square Kilometre Array project. Progress with the development of KAT7 is on track, with the acquisition of the site in the Karoo being finalised and construction having commenced.

The foundation's rating system is one of the main instruments used to evaluate the quality of research in South Africa and contributes to an increasingly competitive science system. The system was reviewed by the Higher Education Statistics Agency in 2007/08 and road shows were taken to 48 tertiary and research institutions to raise awareness of the results. In 2008/09, the number of rated researchers across all disciplines at South African higher education institutions and science councils increased from 49 to 1 653.

In line with the department's human capital development strategy, the National Research Foundation launched the PhD project in November 2007. A PhD fair in May 2008 was attended by about 300 participants representing academia, business, and government. The PhD project aims to facilitate an increase in the numbers of South African PhD graduates to strengthen academic expertise and talent for the knowledge economy. The project has already successfully negotiated 10 fully paid scholarships at Singapore University and 17 co-funded scholarships at Vrije Universiteit in Amsterdam. Discussions are ongoing with Rutgers University, the German Science Council and the Common Wealth Research Council for scholarships.

The research information management system, hosted by the National Research Foundation on behalf of the research and academic sector, has progressed substantially during the year, with two modules implemented and other modules in development. The University of the Witwatersrand is using the research output module for submitting research output data to the Department of Education, soon to be followed by other members of the research information management consortium. The process of awarding research chairs has progressed more slowly than anticipated due to funding constraints. However, 18 research chairs are expected to be awarded by the end of March 2009.

Grant holders supported through core government funds increased from 1 680 in 2006/07 to 1 716 in 2007/08, with an average grant size of R89 000. This represents 4 out of every 10 fundable projects. Total research outputs, such as peer-reviewed articles, increased by 13 per cent from 2 507 in 2006/07 to 2 884 in 2007/08. International collaborations increased from 190 in 2006/07 to 231 in 2007/08.

The number of students supported through Research and Innovation Support Agency grant holder linked and free standing bursaries decreased from 4 678 in 2006/07 to 3 675 in 2007/08 due to the competitive funding process, an increase in bursary values, and an increasing number of science councils offering their own bursaries at higher levels to students.

During 2007/08, the National Zoological Gardens, a facility of the National Research Foundation, was awarded gold status by the heritage environmental rating programme for environmental practices. Despite this, an inability to adequately sustain maintenance due to funding constraints led to the suspension of its accreditation with the Pan African Association for Zoos, Aquaria and Botanical Gardens.

Expenditure estimates

Table 31.13 National Research Foundation: Programme information

R thousand	Audited outcome			Revised estimate	Medium-term estimate		
	2005/06	2006/07	2007/08		2008/09	2009/10	2010/11
Research innovation support and advancement	737 741	485 359	581 370	745 517	906 856	936 375	1 004 069
National Facilities	245 058	280 003	316 900	320 712	347 232	375 010	392 635
South African Agency for science and Technology Advancement	27 451	29 022	30 113	46 861	39 447	42 602	44 604
Square Kilometre Array project	20 446	30 499	47 433	76 516	112 956	163 814	196 373
Total expense	1 030 696	824 883	975 816	1 189 606	1 406 491	1 517 801	1 637 682

Table 31.14 National Research Foundation: Financial information

R thousand	Audited outcome			Revised estimate	Medium-term estimate		
	2005/06	2006/07	2007/08		2008/09	2009/10	2010/11
Statement of financial performance							
Revenue							
Non-tax revenue	447 342	255 634	491 221	653 110	869 335	1 161 466	1 027 439
Sale of goods and services other than capital assets	7 659	19 790	25 344	25 184	30 198	33 500	36 180
<i>of which:</i>							
<i>Sales by market establishments</i>	7 659	19 790	25 344	25 184	30 198	33 500	36 180
<i>Other non-tax revenue</i>	439 683	235 844	465 877	627 926	839 137	1 127 966	991 259
Transfers received	542 144	580 411	621 260	399 831	537 156	356 335	610 243
Total revenue	989 486	836 045	1 112 481	1 052 941	1 406 491	1 517 801	1 637 682
Expenses							
Current expense	393 839	427 497	491 840	660 234	652 071	743 071	799 375
Compensation of employees	203 582	221 675	242 846	308 836	341 922	375 966	394 869
Goods and services	178 993	190 085	219 921	319 430	276 681	322 188	350 439
Depreciation	11 103	15 074	28 649	31 524	32 968	44 417	53 567
Interest, dividends and rent on land	161	663	424	444	500	500	500
Transfers and subsidies	636 857	397 386	483 976	529 372	754 420	774 730	838 307
Total expenses	1 030 696	824 883	975 816	1 189 606	1 406 491	1 517 801	1 637 682
Surplus / (Deficit)	(41 210)	11 162	136 665	(136 665)	-	-	-
Statement of financial position							
Carrying value of assets	163 078	210 559	240 111	603 322	794 766	1 232 744	1 474 274
<i>of which: Acquisition of assets</i>	43 351	62 755	59 768	395 025	224 412	482 395	295 097
Investments	81 149	53 418	52 046	52 046	50 000	50 000	50 000
Inventory	2 863	2 696	2 579	3 093	3 500	3 500	4 000
Loans	3 051	3 462	-	-	-	-	-
Receivables and prepayments	745 719	102 878	298 462	250 086	300 000	350 000	375 000
Cash and cash equivalents	311 506	371 159	507 334	422 276	380 000	350 000	300 000
Total assets	1 307 366	744 172	1 100 532	1 330 823	1 528 266	1 986 244	2 203 274
Accumulated surplus / deficit	(69 005)	(72 618)	42 562	(92 309)	(55 000)	(48 000)	(40 000)
Capital and reserves	77 649	77 073	98 558	125 558	125 558	125 558	125 558
Borrowings	9 787	-	-	-	-	-	-
Post-retirement benefits	88 060	88 967	93 630	96 597	99 612	102 580	105 431
Trade and other payables	1 037 419	456 643	644 459	650 000	654 730	596 762	569 411
Provisions	15 729	-	-	-	-	-	-
Liabilities not classified elsewhere	147 727	194 107	221 323	550 977	703 366	1 209 344	1 442 874
Total equity and liabilities	1 307 366	744 172	1 100 532	1 330 823	1 528 266	1 986 244	2 203 274

Expenditure trends

The National Research Foundation is funded by transfers (as a core grant) from the Department of Science and Technology, as well as ringfenced allocations. Allocations over the MTEF period are R697 million, R759 million and R814 million. Over and above the MTEF baseline allocations, the foundation will receive additional allocations of R37 million, R43 million and R46 million.

The decrease in the audited outcome in 2006/07 and 2007/08 compared to 2005/06 is attributable to the disaggregation of two key programmes, the Innovation Fund and the technology for human resources and industry programme, from the consolidated results of the foundation. In terms of accounting standards, control

over these programmes rests with the Department of Science and Technology and the Department of Trade and Industry respectively.

The foundation received a lower government grant (6 per cent) in 2007/08. However, overall income increased substantially due to the increase in contract funded programmes which correlates with the spending pattern. This impact is reflected mainly in expenditure items relating to salaries and wages and research grants. Key contract funded programmes include: the Department of Labour scarce skills study; the development of the research information management system; the South African National Antarctic Programme; the Department of Science and Technology innovation honours programme; the African coelacanth ecosystem programme; and the establishment of six South African environmental observatory network nodes. The single largest source of contract funds is from the initial phase of the Square Kilometre Array project, which is capital intensive and therefore impacts significantly on deferred income.

Academy of Science of South Africa

Strategic overview: 2005/06 - 2011/12

The Academy of Science of South Africa was inaugurated in May 1996 and the Academy of Science of South Africa Act (2001) makes it the official national science academy, recognised by government and representing South Africa in the international community of science academies.

The objectives of the academy are to: promote common ground in scientific thinking across disciplines; encourage and promote innovative and independent scientific thinking; promote the development of the intellectual capacity of all people; provide effective advice and facilitate appropriate action in relation to the collective needs of all South Africans; and link South Africa with scientific communities at the highest levels, in particular in Africa

The academy's partnership with the United States National Academies contributed financially to the African science academies development initiative. This support has provided a vehicle for improving cooperation between African science academies and their members, and is capitalising on work done in individual countries for the benefit of other countries.

Membership of the academy has grown steadily since 2005/06, and is currently 315. 24 per cent of members are women and 29 per cent are black.

With funding increasing over the MTEF period, the academy aims to expand and diversify create its sources of funding to ensure its sustainability and independence. Over the seven-year period, the full time staff complement will have grown from 5 to 17, which reflects growing involvement in international and national liaison activities, and more project related activities.

Selected performance and operations indicators

Table 31.15 Academy of Science of South Africa

Indicator	Activity / Objective / Programme / Project	Past			Current 2008/09	Projections		
		2005/06	2006/07	2007/08		2009/10	2010/11	2011/12
Number of specialist and sector committees and panels guiding research each year	Meetings	7	7	11	20	19	12	12
Number of specialist and sector reports published each year	Publications	1	1	2	2	4	-	-
Number of issues of Quest magazine published each year	Publications	4	4	4	5	4	4	4
Number of issues of the South African Journal of Science published each year	Publications	6	6	6	6	6	6	6
Number of public lectures hosted each year	Training	6	6	6	6	6	6	6
Number of awarded research fellowships each year	Training	-	1	2	2	2	2	2

Service delivery and spending focus

Four new consensus studies were initiated in 2007/08 on: clinical research and related training in South Africa, the state of the humanities in South Africa, enhancing the production of postgraduates, and improved nutritional assessment in South Africa. Forum studies on science education and science for poverty alleviation continue. Studies on the challenges and opportunities in genetically modified organisms in Africa and improving maternal, newborn and child health in Africa are being planned. The academy hosted an online scientific writing workshop, meetings of the South African National Editors' Forum, the scholarly publishing committee on science for the alleviation of poverty, and the SciELO site visit in Brazil and a follow up meeting in South Africa.

The academy also published a report on scholarly publishing in South Africa, 7 issues of the Quest: Science for South Africa magazine, and 10 issues of the South African Journal of Science. It conducted 12 public lectures and 5 visiting lectures in 4 provinces.

The academy awarded 3 prizes, 5 gold medals and 2 research fellowships.

Expenditure estimates

Table 31.16 Academy of Science of South Africa: Financial information

R thousand							
Statement of financial performance	Audited outcome			Revised estimate 2008/09	Medium-term estimate		
	2005/06	2006/07	2007/08		2009/10	2010/11	2011/12
Revenue							
Non-tax revenue	544	1 002	835	1 119	929	955	1 000
Sale of goods and services other than capital assets	305	730	378	609	369	375	400
<i>of which:</i>							
<i>Sales by market establishments</i>	<i>305</i>	<i>730</i>	<i>378</i>	<i>609</i>	<i>369</i>	<i>375</i>	<i>400</i>
<i>Other non-tax revenue</i>	<i>239</i>	<i>272</i>	<i>457</i>	<i>510</i>	<i>560</i>	<i>580</i>	<i>600</i>
Transfers received	4 048	4 960	7 530	8 656	7 100	7 430	8 069
Total revenue	4 592	5 962	9 437	13 706	15 574	16 151	16 809
Expenses							
Current expense	4 743	5 957	8 167	13 706	15 574	16 151	16 809
Compensation of employees	1 702	2 065	2 785	4 922	5 267	5 593	5 912
Goods and services	3 016	3 869	5 352	8 746	10 264	10 512	10 847
Depreciation	25	23	30	38	43	46	50
Total expenses	4 743	5 957	8 167	13 706	15 574	16 151	16 809
Surplus / (Deficit)	(151)	5	1 270	-	-	-	-
Statement of financial position							
Carrying value of assets	173	169	139	219	240	262	284
<i>of which: Acquisition of assets</i>	<i>117</i>	<i>84</i>	<i>-</i>	<i>118</i>	<i>64</i>	<i>68</i>	<i>72</i>
Cash and cash equivalents	5 104	4 337	5 275	6 330	4 807	4 797	4 782
Total assets	5 277	4 506	5 414	6 549	5 047	5 059	5 066
Accumulated surplus/deficit	3 695	3 700	4 970	6 549	5 047	5 059	5 066
Trade and other payables	1 582	806	444	-	-	-	-
Total equity and liabilities	5 277	4 506	5 414	6 549	5 047	5 059	5 066

Expenditure trends

The Academy of Science of South Africa is primarily funded by transfer payments from the Department of Science and Technology. Transfers received are R7.1 million in 2009/10, R7.4 million in 2010/11 and R8.1 million in 2011/12. Allocations of R700 000, R830 000 and R869 000 are for Quest magazine and other publishing. Total revenue is set to grow at an average annual rate of 7 per cent over the medium term, rising from R13.7 million in 2008/09 to R16.8 million in 2011/12.

Expenditure increased from R4.7 million to R8.6 million from 2005/06 to 2008/09. This significant increase is due to increased activities, like seminars and workshops. Over the medium term, expenditure is expected to increase from R7.1 million to R8 million. The bulk of expenditure is on compensation of employees and goods and services.

Human Sciences Research Council

Strategic overview: 2005/06 - 2011/12

The Human Sciences Research Council is a statutory research council established in 1968 to undertake, promote and coordinate research in the human and social sciences. It carries out collaborative research projects and publishes and disseminates research findings. It has offices in four provinces.

The new Human Sciences Research Council Act (2008) mandates the council to:

- address developmental challenges in South Africa, Africa and the rest of the world through strategic basic and applied research in the human sciences
- inform policy making and evaluate its implementation
- stimulate public debate by disseminating fact based research results
- build research capacity and infrastructure for the human sciences
- foster research collaboration, networks and institutional links
- respond to the needs of vulnerable and marginalised groups through its research
- develop and make available data sets underpinning research, policy development and the public discussion of development issues.

The act also allows the council to undertake or commission research on any subject in the field of the human sciences and to charge fees for research and other services it provides.

The council aligns itself with South Africa's national development priorities, notably: poverty reduction through economic development, skills enhancement, job creation, the elimination of discrimination and inequalities, social inclusion and exclusion, and effective service delivery. Thematic research areas include: crime and violence, democracy and governance, youth and children, education and science, science and innovation, HIV and AIDS, and the family and society. Community based demonstration projects are designed to gather scientific evidence to inform government policies and intervention programmes.

The council's performance is measured in terms of indicators for: its public purpose mandate; international collaboration, with emphasis on research in Africa; the implementation and impact of research; transformation of the workforce; excellence and capacity building in research; and sustainability through securing external funding to supplement the government grant in order to support long term, large scale research projects and programmes.

Table 31.17 Human Sciences Research Council

Indicator	Past			Current	Projections		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Percentage of research projects conducted for the benefit of the public each year	–	92%	93%	96%	92%	94%	95%
Percentage of large research projects done collaboratively with researchers in other parts of Africa each year	–	33%	31%	20%	35%	38%	40%
Number of African research fellows at the council each year	–	4	7	6	10	12	14
Percentage of large research projects with implementation networks	–	70%	81%	85%	70%	75%	75%
Percentage of researchers at senior level who are black and African	–	25%	37%	34%	45%	50%	52%
Number of resignations of permanent members of staff each year	–	11	15	6	12	12	12
Percentage of staff trained in gender sensitivity	–	57%	76%	70%	75%	75%	78%

Table 31.17 Human Sciences Research Council (continued)

Indicator	Past			Current	Projections		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Number of peer reviewed publications in an international journal, per senior researcher each year	–	1	1	0	1.3	1.5	1.5
Number of peer reviewed publications per junior researcher each year	–	0	1	0	0.6	0.65	0.67
Number of research interns enrolled in a Master's programme each year	–	29	46	30	32	34	34
Number of research interns enrolled in a PhD programme each year	–	20	35	33	21	22	25
Number of post-doctoral fellowships awarded each year	–	4	10	12	18	20	22

Service delivery and spending focus

In 2007/08, the Human Sciences Research Council was involved in The Presidency's Scenarios 2019 project, both in the scoping and in undertaking 9 research projects covering areas such as migration, poverty, social exclusion, employment and economic growth. The council contributed to the process that led to the publication of The Presidency's Scenarios 2025 document.

Studies in child protection led to an integrated child care and protection plan in Western Cape. Collaborative work on teacher education informed key interventions to improve the quality of education in South African schools. Strategic research inputs were provided for the implementation of the 2007 to 2011 HIV and AIDS and sexually transmitted infections strategic plan, and support was provided for establishing the research sector for the South African National AIDS Council. Policy oriented work on a national health insurance enabled key stakeholders in the health care industry to debate the structure, organisation and funding of a national health system, and to develop a programme of work. The annual research and development surveys, conducted on behalf of the Department of Science and Technology, inform the national 10-year plan for innovation (2008-2018). Research on why students drop out of university and related trends will inform more effective financial support structures for disadvantaged university students.

Groundbreaking impact assessment projects on post-apartheid labour market legislation were undertaken for the Department of Labour. The council also assisted the Department of Provincial and Local Government with the analysis of civil society's view on the efficiency and effectiveness of local government for the new White Paper on Provincial Government.

Increasing numbers of government departments and other institutions have access to the council's information resources. The monthly readership for the council's on-line publications covers at least 127 different countries. International scholarly book publishers are estimated to have a citation factor of 12, while South Africa's publishers average 6. The HSRC Press is estimated to have a citation factor of 11.49, the highest of all publishers in Africa.

Expenditure estimates

Table 31.18 Human Sciences Research Council: Programme information

Statement of financial performance	Audited outcome			Revised estimate	Medium-term estimate		
	2005/06	2006/07	2007/08	2008/09	2005/06	2006/07	2007/08
Social Aspects of HIV and AIDS	44 555	46 931	50 084	51 134	63 512	70 044	74 726
Child, Youth, Family and Social Development	31 287	32 955	35 169	35 907	44 598	49 185	52 473
Education, Science and Skills Development	22 312	23 502	25 080	25 607	31 805	35 076	37 420
Knowledge Systems	21 581	22 732	24 259	24 768	30 763	33 927	36 195
Democracy and Governance	16 671	17 560	8 740	19 133	23 764	26 208	27 960
Other programmes	91 965	96 869	103 376	105 544	131 093	144 575	154 240
Total expense	228 370	240 549	256 707	262 093	325 536	359 014	383 014

R thousand

Table 31.19 Human Sciences Research Council: Financial information

R thousand	Audited outcome			Revised estimate	Medium-term estimate		
Statement of financial performance	2005/06	2006/07	2007/08	2008/09	2005/06	2006/07	2007/08
Revenue							
Non-tax revenue	126 873	138 081	133 862	164 873	178 888	194 093	210 591
Sale of goods and services other than capital assets <i>of which:</i>	113 896	124 605	113 628	127 649	138 499	150 272	163 045
<i>Sales by market establishments</i>	113 896	124 605	113 628	127 649	138 499	150 272	163 045
<i>Other non-tax revenue</i>	12 977	13 476	20 234	37 224	40 388	43 821	47 546
Transfers received	104 293	107 479	130 464	136 951	157 580	164 967	174 960
Total revenue	231 166	245 560	264 326	301 824	336 468	359 060	385 551
Expenses							
Current expense	228 370	240 549	256 707	262 093	325 536	359 014	383 014
Compensation of employees	112 623	121 153	138 639	131 388	167 566	181 545	196 697
Goods and services	111 642	115 602	113 877	126 477	146 981	164 908	174 722
Depreciation	4 105	3 794	4 191	4 229	10 989	12 561	11 595
Total expenses	228 370	240 549	256 707	262 093	325 536	359 014	383 014
Surplus / (Deficit)	2 796	5 011	7 619	39 731	10 932	46	2 537
Statement of financial position							
Carrying value of assets	90 424	89 420	92 423	366 531	392 584	407 466	413 097
<i>of which: Acquisition of assets</i>	4 743	2 832	7 356	278 337	37 041	27 442	17 226
Inventory	2 023	3 268	3 631	3 631	3 940	4 275	4 638
Receivables and prepayments	21 466	34 393	37 674	25 063	27 193	29 505	32 013
Cash and cash equivalents	15 903	29 393	46 864	76 345	82 834	89 875	97 515
Assets not classified elsewhere	–	46	305	1 821	1 976	2 144	2 326
Total assets	129 816	156 520	180 897	473 391	508 527	533 264	549 588
Accumulated surplus/deficit	89 606	90 286	97 905	137 636	139 579	135 880	138 383
Capital and reserves	–	–	–	210 314	273 200	301 432	306 183
Trade and other payables	32 124	52 621	59 213	99 873	69 170	68 276	76 155
Provisions	8 086	9 748	10 110	11 898	12 908	14 006	15 197
Liabilities not classified elsewhere	–	3 865	13 669	13 670	13 670	13 670	13 670
Total equity and liabilities	129 816	156 520	180 897	473 391	508 527	533 264	549 588

Expenditure trends

The Human Sciences Research Council is funded by transfer payments from the Department of Science and Technology. External revenue comes from research grants, contract research work and non-research activities such as rental income. Transfers received over the MTEF period include additional allocations of R2.5 million, R20 million and R20.9 million for human and social sciences research and human capital. Total revenue is expected to grow at an average annual rate of 8.5 per cent over the MTEF period, rising from R301.8 million in 2008/09 to R385.6 million in 2011/12.

Between 2005/06 and 2008/09, expenditure increased at an average annual rate of 4.7 per cent, from R228.4 million to R262.1 million. The largest increase, of 6.7 per cent in 2007/08, was mainly due to increases in salary related expenses, driven by increases in the number of staff, including project staff on a number of large demonstration projects, and general salary increases. Over the medium term, expenditure is expected to rise at an average annual rate of 13.5 per cent, to reach R383 million in 2011/12.

Tshumisano Trust

Strategic overview: 2005/06 - 2011/12

Tshumisano Trust was established in 2002 as a joint venture. It is funded by the Department of Science and Technology, with the participation of the Department of Labour, universities of technology, and the German government's funding agency Gesellschaft für Technische Zusammenarbeit. The mandate of Tshumisano Trust is to provide support for the SMME sector.

The trust's technology stations programme aims to strengthen technological innovation activities and related skills upgrading to increase the relative competitiveness of technology based SMMEs in targeted sectors, such as automotive, agri-foods processing, electronics, metal value adding, chemicals, metal casting, composite and moulded plastic, and tooling and die making. The core business of technology stations is to: provide demand driven projects, services and training for paying and sponsored clients; provide public services, including technology dissemination and diffusion and strategic skills development, free or at a nominal fee, to SMMEs; carry out research and development to maintain a competitive edge; and manage the intern process from recruitment and training to job placements.

Tshumisano Trust works closely with the universities of technology. There are currently 12 technology stations at different campuses across the country and 3 stations at the advanced tooling institutes.

Over the next three years, technology stations will be established in Mpumalanga, Limpopo, Northern Cape and North West.

Selected performance and operations indicators

Table 31.20 Tshumisano Trust

Indicator	Past			Current	Projections		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Number of SMMEs assisted each year	787	1 083	1 277	988	1 800	2 100	2 100
Number of products developed each year	600	918	1 295	870	1 850	2 200	2 600
Number of research and development projects implemented each year	40	71	87	75	180	220	260
Number of patents registered each year	4	8	6	6	25	35	45
Number of interns trained each year	46	87	176	250	300	400	450
Value of research and development projects each year	R0.8m	R10.5m	R13m	R7.5m	R16m	R17m	R18m

Service delivery and spending focus

In 2007/08, the 12 technology stations provided training and skills to 1 277 SMMEs.

Through the technology stations, Tshumisano Trust has improved the quality of service delivery and training. Key activities include technology stations advising forums, rapid appraisal of local innovation services, technology transfer and diffusion workshops, one-on-one sessions, monitoring and evaluation visits to all stations in South Africa, and clusters of tooling, primary and secondary manufacturing.

Expenditure estimates

Table 31.21 Tshumisano Trust: Financial information

Statement of financial performance	Audited outcome			Revised estimate	Medium-term estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Revenue							
Non-tax revenue	1 789	1 557	1 040	612	1 021	1 102	916
<i>Other non-tax revenue</i>	1 789	1 557	1 040	612	1 021	1 102	916
Transfers received	24 366	46 680	52 155	39 400	39 082	41 413	40 927
Total revenue	26 155	48 237	53 195	40 012	40 103	42 515	41 843

Table 31.21 Tshumisano Trust: Financial information (continued)

R thousand		Audited outcome			Revised estimate	Medium-term estimate		
Statement of financial performance	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	
Expenses								
Current expense	29 684	52 057	52 957	40 012	39 463	41 837	41 843	
Compensation of employees	1 432	2 388	3 273	3 882	4 154	4 387	4 689	
Goods and services	28 066	49 375	49 278	35 350	35 136	37 393	37 097	
Depreciation	186	283	382	168	173	57	57	
Interest, dividends and rent on land	–	11	24	612	–	–	–	
Transfers and subsidies	21	–	–	–	640	678	–	
Total expenses	29 705	52 057	52 957	40 012	40 103	42 515	41 843	
Surplus / (Deficit)	(3 550)	(3 820)	238	–	–	–	–	
Statement of financial position								
Carrying value of assets	525	1 261	1 239	1 071	1 107	1 442	1 194	
<i>of which: Acquisition of assets</i>	<i>113</i>	<i>1 019</i>	<i>360</i>	<i>–</i>	<i>201</i>	<i>392</i>	<i>–</i>	
Investments	26 314	5 282	1 978	1 120	2 213	2 262	–	
Receivables and prepayments	1 883	168	70	70	186	196	530	
Cash and cash equivalents	489	3 892	3 871	980	1 974	2 101	517	
Total assets	29 211	10 603	7 158	3 241	5 480	6 001	2 241	
Accumulated surplus / deficit	7 056	3 229	3 467	1 781	1 870	2 386	1 200	
Trade and other payables	22 155	1 334	260	150	3 610	3 615	1 041	
Liabilities not classified elsewhere	–	6 040	3 431	1 310	–	–	–	
Total equity and liabilities	29 211	10 603	7 158	3 241	5 480	6 001	2 241	

Expenditure trends

Tshumisano Trust is funded by transfer payments (as a core grant) from the Department of Science and Technology, as well as ringfenced allocations. Total revenue is expected to grow at an average annual rate of 1.5 per cent over the MTEF period, rising from R40 million in 2008/09 to R41.8 million in 2011/12. Allocations over the MTEF period are R39.1 million in 2009/10, R41.4 million in 2010/11 and R40.9 million in 2011/12. These amounts include additional earmarked allocations of R694 000, R840 000 and R880 000 over the period for an interns programme.

Expenditure of R29.7 million in 2005/06 increased at an average annual rate of 10.4 per cent to R40 million in 2008/09. Over the medium term, expenditure is expected to increase at an average annual rate of 1.5 per cent to reach R41.8 million in 2011/12. The bulk of expenditure is on compensation of employees and goods and services.

Africa Institute of South Africa

Strategic overview: 2005/06 - 2011/12

The Africa Institute of South Africa is a statutory body established in terms of the Africa Institute of South Africa Act (2001). It focuses primarily on political, socioeconomic, international and development issues in contemporary Africa, and contributes to the goals of the national system of innovation through research programmes which impact on knowledge production, human resource development (especially developing capacity in African studies, a scarce resource in South Africa), social science, and innovation. The institute's key role is to conduct research, support policy development, embark on training programmes, and establish, participate in and maintain networks for peace, development and prosperity in Africa.

Over the next three years, regional integration and continental unity will be the focus of the research programme. Stronger networks and joint projects will be pursued with government departments, universities, like minded institutions and researchers with an interest in Africa. In particular, linkages with the African

Union, the New Partnership for Africa's Development and United Nations agencies will be further developed. The institute's capacity building and publishing programmes will be extended into other parts of Africa.

Selected performance and operations indicators

Table 31.22 Africa Institute of South Africa

Indicator	Past			Current 2008/09	Projections		
	2005/06	2006/07	2007/08		2009/10	2010/11	2011/12
Number of books published each year	1	3	5	9	12	14	16
Number of journal articles published each year	–	–	15	66	72	78	76
Number of occasional papers published each year	4	2	2	6	8	10	12
Number of reference works published each year	1	3	3	3	3	3	3
Number of newsletters published each year	5	3	3	5	4	4	4
Number of outside contributors journal articles published each year	–	–	15	66	72	78	76
Number of journals published each year	4	4	4	4	4	4	4
Number of monograph papers published each year	2	2	5	10	12	14	16
Number of policy and position papers accepted from African Institute of South Africa researchers each year	–	–	16	66	72	78	76

Service delivery and spending focus

To align itself with its Africa wide mandate, the Department of Science and Technology's 10-year innovation plan, the White Paper on Science and Technology and the national research and development strategy, the Africa Institute of South Africa restructured its research division to incorporate 2 additional units: science and technology, and policy. The unit published a range of outputs.

The institute has introduced new membership categories that allow young graduates, students, tertiary scholars and graduates from Africa to become members at no cost.

In the internship programme, 8 research and 4 support function interns have been appointed. The fellowships programme hosted a range of scholars and researchers.

The campus lecture series focused on teaching principles of research methodology. The outreach programme has reached about 201 schools and 6 community libraries.

The publication division maintained accreditation of the journal Africa Insight, and increased its membership subscription.

Expenditure estimates

Table 31.23 Africa Institute of South Africa: Financial information

R thousand							
Statement of financial performance	Audited outcome			Revised estimate 2008/09	Medium-term estimate		
	2005/06	2006/07	2007/08		2009/10	2010/11	2011/12
Revenue							
Non-tax revenue	1 126	1 265	1 222	721	779	841	908
Sale of goods and services other than capital assets	134	118	54	36	39	42	45
<i>of which:</i>							
<i>Sales by market establishments</i>	134	118	54	36	39	42	45
<i>Other non-tax revenue</i>	992	1 147	1 168	685	740	799	863
Transfers received	20 468	23 454	26 530	30 464	29 280	30 594	32 440
Total revenue	21 594	24 719	27 752	31 185	30 059	31 435	33 348

Table 31.23 Africa Institute of South Africa: Financial information (continued)

R thousand				Revised estimate	Medium-term estimate		
Statement of financial performance	Audited outcome				2008/09	2009/10	2010/11
	2005/06	2006/07	2007/08				
Expenses							
Current expense	21 027	21 535	24 047	27 407	24 938	23 630	30 612
Compensation of employees	12 627	11 655	11 206	14 476	13 320	11 461	14 110
Goods and services	7 716	9 438	12 396	12 566	11 258	11 732	16 008
Depreciation	675	345	314	329	321	395	449
Interest, dividends and rent on land	9	97	131	36	39	42	45
Total expenses	21 027	21 535	24 047	27 407	24 938	23 630	30 612
Surplus / (Deficit)	567	3 184	3 705	3 778	5 121	7 805	2 736
Statement of financial position							
Carrying value of assets	1 043	1 521	2 386	3 302	3 641	4 263	4 502
<i>of which: Acquisition of assets</i>	292	97	1 221	1 412	660	1 017	688
Investments	31	32	34	–	–	–	–
Inventory	615	815	704	1 820	2 820	4 820	3 320
Receivables and prepayments	4 006	1 015	368	718	1 860	2 263	1 911
Cash and cash equivalents	624	6 072	8 221	8 288	11 049	11 049	11 401
Assets not classified elsewhere	–	1 331	2 285	3 277	2 285	4 282	6 376
Total assets	6 319	10 786	13 998	17 405	21 655	26 677	27 510
Accumulated surplus / deficit	2 999	7 756	11 461	15 239	19 489	24 511	26 433
Borrowings	–	666	–	–	–	–	–
Trade and other payables	2 959	1 694	1 667	1 096	1 091	1 091	506
Provisions	361	670	870	1 070	1 075	1 075	571
Total equity and liabilities	6 319	10 786	13 998	17 405	21 655	26 677	27 510

Expenditure trends

The Africa Institute of South Africa is funded mainly by transfers from the Department of Science and Technology. Total revenue is expected to grow at an average annual rate of 2.3 per cent over the MTEF period, rising from R31.2 million in 2008/09 to R33.3 million in 2011/12. Transfers over the MTEF period grow at an average annual rate of 2.1 per cent.

Expenditure of R21 million in 2005/06 increased at an average annual rate of 9.2 per cent to R27.4 million in 2008/09. Over the medium term, expenditure is expected to increase at an average annual rate of 3.8 per cent to reach R30.6 million in 2011/12. The bulk of expenditure is on compensation of employees and goods and services.

Additional tables

Table 31.A Summary of expenditure trends and estimates per programme and economic classification

Programme	Appropriation		Audited outcome	Appropriation			Revised estimate
	Main	Adjusted		Main	Additional	Adjusted	
R thousand	2007/08		2007/08	2008/09			2008/09
1. Administration	85 322	115 062	113 390	115 284	(198)	115 086	115 086
2. Research, Development and Innovation	546 551	541 301	531 444	862 868	198	863 066	863 066
3. International Cooperation and Resources	118 016	103 776	99 433	129 315	1 523	130 838	130 838
4. Human Capital and Knowledge Systems	1 257 329	1 252 079	1 272 583	1 449 474	3 361	1 452 835	1 452 835
5. Socioeconomic Partnerships	1 135 261	1 132 011	1 110 430	1 147 031	12 859	1 159 890	1 159 890
Total	3 142 479	3 144 229	3 127 280	3 703 972	17 743	3 721 715	3 721 715
Economic classification							
Current payments	222 226	246 934	211 000	226 629	16 223	242 852	242 852
Compensation of employees	112 964	114 861	104 075	130 170	5 719	135 889	135 889
Goods and services	109 262	132 059	106 843	96 459	10 504	106 963	106 963
Financial transactions in assets and liabilities	–	14	82	–	–	–	–
Transfers and subsidies	2 917 799	2 894 611	2 908 359	3 475 082	1 646	3 476 728	3 476 728
Departmental agencies and accounts	1 624 885	1 616 012	1 516 928	1 927 672	(17 040)	1 910 632	1 910 632
Universities and technikons	10 000	15 033	45 817	10 000	8 309	18 309	18 309
Public corporations and private enterprises	517 352	593 534	1 023 212	550 861	328 209	879 070	879 070
Non-profit institutions	765 562	669 386	322 215	986 549	(318 247)	668 302	668 302
Households	–	646	187	–	415	415	415
Payments for capital assets	2 454	2 684	7 921	2 261	(126)	2 135	2 135
Machinery and equipment	2 454	2 684	7 921	2 261	(126)	2 135	2 135
Total	3 142 479	3 144 229	3 127 280	3 703 972	17 743	3 721 715	3 721 715

Table 31.B Summary of personnel numbers and compensation of employees

	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Permanent and full time contract employees							
Compensation (R thousand)	61 119	79 479	99 811	134 080	190 901	202 149	213 766
Unit cost (R thousand)	260	264	332	396	496	469	448
Personnel numbers (head count)	235	301	301	339	385	431	477
Part time and temporary contract employees							
Compensation (R thousand)	4 006	4 264	4 264	1 809	1 918	2 033	2 155
Unit cost (R thousand)	129	129	129	129	137	145	154
Personnel numbers (head count)	31	33	33	14	14	14	14
Total for department							
Compensation (R thousand)	65 125	83 743	104 075	135 889	192 819	204 182	215 921
Unit cost (R thousand)	245	251	312	385	483	459	440
Personnel numbers (head count)	266	334	334	353	399	445	491

Table 31.C Summary of expenditure on training

	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Compensation of employees (R thousand)	65 125	83 743	104 075	135 889	192 819	204 182	215 921
Training expenditure (R thousand)	3 269	962	3 648	5 249	5 000	5 120	5 377
Training as percentage of compensation	5.0%	1.1%	3.5%	3.9%	2.6%	2.5%	2.5%
Total number trained in department (head count)	113	120	127	141			
<i>of which:</i>							
Employees receiving bursaries (head count)	37	38	41	46			

Table 31.D Summary of donor funding

Donor	Project	Departmental programme name	Amount committed	Main economic classification	Spending focus	Audited outcome			Estimate				
						2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	
R thousand Foreign In cash													
Canadian International Development Agency	Epidemiological modelling for HIV and AIDS policy in South Africa	Research, Development and Innovation	20 000	Departmental agencies and accounts	Improved region, age and gender specific epidemiological measures incorporated into routine surveillance. Increased capacity of young South Africans to perform gender sensitive, policy impacting epidemiological research	-	-	-	4 000	4 000	4 000	4 000	4 000
Japan International Cooperation Agency	Productivity training	International Cooperation and Resources	700	Goods and services	Increase the employability level of science and technology graduates	-	-	200	500	-	-	-	-
Japan International Cooperation Agency	Climate change regional conference	International Cooperation and Resources	600	Goods and services	Support the Southern Africa Development Community climate change agenda	-	-	-	600	-	-	-	-
Japan International Cooperation Agency	Science centre baseline study on learning material	International Cooperation and Resources	200	Goods and services	Provide quality baseline data on what learning materials are available in science centres and recommend a standardisation of learning material	-	-	-	200	-	-	-	-
Japan International Cooperation Agency	African initiative for Capacity Development support	International Cooperation and Resources	200	Goods and services	Logistical and administrative support for the African Initiative for Capacity Development technical assistant	-	-	-	200	-	-	-	-
Japan International Cooperation Agency	Intellectual property management training	International Cooperation and Resources	1 200	Goods and services	Build South African capacity in intellectual property rights management	-	-	-	1 200	-	-	-	-
AUSAID, Australia	Postgraduate mentor bursary programme and South African Energy Research Institute Sector-budget support	International Cooperation and Resources	186	Goods and services	Funded postgraduate exchange programmes, creating opportunities in energy research	-	-	186	-	-	-	-	-
European Union		International Cooperation and Resources	300 000	Departmental agencies and accounts	Create programmes and measures designed to reduce poverty and encourage economic growth in South Africa	-	-	-	100 000	100 000	100 000	100 000	-
Finland	Cooperation framework on innovation between Finland and South Africa	International Cooperation and Resources	30 000	Departmental agencies and accounts	Support the development of provincial and local systems of innovation, especially in Eastern Cape, Gauteng and Western Cape	-	-	10 000	10 000	10 000	-	-	-

Table 31.D Summary of donor funding (continued)

Donor	Project	Departmental programme name	Amount committed	Main economic classification	Spending focus	Audited outcome		Estimate		Medium-term expenditure estimate	
						2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
R thousand											
Foreign In cash											
Finland	South Africa-Finland knowledge partnership on information communication technology	International Cooperation and Resources	30 000	Departmental agencies and accounts	Interventions to help South Africa become a knowledge society with information communication technology branding reflecting research excellence and demonstrating improvements in quality of life and economic competitiveness	-	-	10 000	10 000	10 000	-
Finland	Finland and South Africa to support the development of biosciences in Southern Africa	International Cooperation and Resources	30 000	Departmental agencies and accounts	Institutional strengthening of the Southern Africa biosciences network secretariat. Development of the operating environment. Capacity development. Network creation and dissemination. Identification, development and implementation of projects by the network	-	-	-	10 000	10 000	10 000
AUSAID, Australia	Science centre manager training	Human Capital and Knowledge Systems	862	Goods and services	Train 20 South African and 5 Lesotho science centre managers in South Africa initially. Further train 5 South African and 2 Lesotho participants in Australia on a similar course	-	-	-	862	-	-
Germany	Financial assistance towards the Academy of Sciences for the Developing World conference	International Cooperation and Resources	1 000	Goods and services	Host the multilateral Academy of Sciences for the Developing World conference, aiming at promoting scientific excellence	-	-	-	1 000	-	-
Japan International Cooperation Agency	African initiative for Capacity Development technical assistance	International Cooperation and Resources	6 800	Foreign governments and international organisations	Assistance with creation and implementation of the African Initiative for Capacity Development, and the design and implementation of pilot projects	-	-	1 700	1 700	1 700	1 700
Japan International Cooperation Agency	Science centre senior volunteers in Limpopo	Human Capital and Knowledge Systems	6 000	Foreign governments and international organisations	Support science centres to develop teaching material for science and maths education and to develop exhibitions	-	-	1 500	1 500	1 500	1 500
Japan International Cooperation Agency	Science centre senior volunteers in Eastern Cape	Human Capital and Knowledge Systems	2 000	Foreign governments and international organisations	Support science centres to develop teaching material for science and maths education and to develop exhibitions	-	-	-	1 000	1 000	-
Japan International Cooperation Agency	Technical assistant	International Cooperation and resources	8 500	Foreign governments and international organisations	Improve bilateral relationships with the Japanese national system of innovation	1 700	1 700	1 700	1 700	1 700	-
Germany	Technical assistant	International Cooperation and Resources	838	Foreign governments and international organisations	Improve bilateral relationships with the German national system of innovation	-	-	-	449	389	-

