



Annual Performance Plan 2012-2013



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

Official sign-off

It is hereby certified that this Annual Performance Plan was developed by the management of the Department of Science and Technology under the guidance of Minister Pandor. The Annual Performance Plan was prepared in line with the Department's current strategic plan (2011-2016) and it accurately reflects the performance targets which the Department will endeavour to achieve given the resources made available in the budget.

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Foreword



The DST has five strategic goals: to develop the innovation capacity of the science and technology system; to develop South Africa's knowledge-generation capacity; to develop appropriate human capital for research, development and innovation; to build world - class, research, development and innovation infrastructure; and to position South Africa as a strategic international partner and destination. These strategic goals are long-term and are described out in our corporate strategic plan and in our annual reports.

This annual performance plan describes the steps we will take this year to reach our long-term strategic goals. The plan spells out performance indicators and targets for the coming budget year and it reveals what we plan to spend to reach our annual targets. Our research, development and innovation programme works in the exciting fields of space science (R336m), the bio-economy (R131m), energy (R155m), and innovation planning (R496m).

Our international programme manages international relationships, opportunities and science and technology agreements in Africa (R60m), internationally (R47m), and bilaterally (R30m).

Our human-capital programme funds new and established scientists through the Research Chairs initiative, centres of excellence and competence, project funding and a postdoctoral fellowship (R1,418m) and maintains and upgrades cutting-edge knowledge and research infrastructure (R573m). Our socio-economic partnerships programme develops and funds technology-support programmes for industry, new approaches to government service delivery and planning (R372m), and science-based policy development and decision-making (R25m).

The annual performance plan fulfils our aim to become more open and transparent in the work we do in government and to provide citizens with the information they need to measure our performance. We use the information in this report to keep ourselves up to standard and to provide information by which to be held to account by Parliament.

Naledi Pandor

MS GNM PANDOR, MP
MINISTER OF SCIENCE AND TECHNOLOGY

STRATEGIC OVERVIEW

1. Vision

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

2. Mission

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

3. Situational analysis

3.1 Performance delivery environment

The Department of Science and Technology (DST) derives its mandate from the 1996 White Paper on Science and Technology. The DST, as the custodial coordinator for the development of the National System of Innovation (NSI), influences this system through key strategies such as the National Research and Development Strategy (NRDS) and the Ten-Year Innovation Plan (TYIP). The latter, particularly, seeks to contribute to the transformation of the South African economy into a knowledge-based economy, in which the production and dissemination of knowledge will lead to economic benefits and enrich all fields of human endeavour. In this regard, the measure of success will be the level to which science and technology (S&T) play a driving role in enhancing productivity, economic growth and socio-economic development.

The NSI remains an ideal for which South Africa continues to strive. It is an enabling framework for science, technology and innovation (STI). It can be understood as a set of functioning institutions, organisations and policies that interact constructively in the pursuit of a common set of social and economic goals and objectives,

seeking to promote change through the introduction of innovations. In this regard, the NSI framework defines innovation as the introduction into a market (economic or social) of new or improved products and services. Innovation is vital for wealth creation, economic growth and social development, and S&T and research and development (R&D) are the key drivers.

Despite the recent global economic turmoil, countries continue to recognise innovation as a source of long-term growth, and have put policies into place to improve infrastructure, support basic science, and research, development and innovation (RDI), strengthen human capital, promote green technology, and foster entrepreneurship. Stimulus packages have also provided additional support to science and RDI amounting to between 0,01% (Finland and Norway) to 0,29% of gross domestic product (GDP) (Sweden) in 2009 (Organisation for Economic Cooperation and Development (OECD) 2009).

Across the world, in response to increasing rates of knowledge production, dissemination and application, shortening of product life cycles and increasing competition for human resources, many countries are increasing their national investment in R&D. The OECD average across public and private sectors is 2,3% of GDP, and countries such as Finland and Korea spend far more. South Africa's level of 0,92% is significantly lower than it should be to ensure global competitiveness in years to come. For instance, Finland intended to raise its R&D to 4% of GDP by 2010. Korea intends to raise its R&D to 5% of GDP in 2012 and India to 6% by 2015.

In developed countries more than 50% of economic growth is attributable to technical progress. South Africa is competitive in many areas, but has specific challenges that require interventions.

These include the following:

- Achieving critical mass in a small number of long - term, large-scale high-impact priority areas that have been identified over the past few years.
- Ensuring that high-level human capital is developed and employed in long-term productive research careers in South Africa.
- Introducing and strengthening efforts that enhance South Africa's ability to exploit knowledge effectively for economic and social benefit.
- Improving the ability of government investment to leverage private sector and international funding.
- Building the knowledge-generation and knowledge - exploitation capabilities of rural and historically disadvantaged higher education institutions.
- Creating a coordinated and integrated NSI governance system.

The DST Strategic Plan and 2012/13 Annual Performance Plan will play an important role in addressing these challenges as well as enhancing the capacity of the emerging NSI to effectively and efficiently meet its current and future imperatives.

3.2 Organisational environment

The Department is comprised of the following Programmes:

- Programme 1: Administration.
- Programme 2: Research, Development and Innovation.
- Programme 3: International Cooperation and Resources.
- Programme 4: Human Capital and Knowledge Systems.
- Programme 5: Socio-Economic Partnerships.

3.3 Programme objectives linked to the DST outcome-oriented goals

Table 1: Alignment of DST strategic outcome-oriented goals to Programme objectives

DST strategic outcome-oriented goals	Programme objectives
To develop the innovation capacity of the NSI and thereby contribute to socio-economic development	<ul style="list-style-type: none"> • Support RDI initiatives in strategic research areas, namely, space, energy, biosciences and innovation research to enhance our knowledge and skills base. • To increase leverage of foreign STI funds that will stimulate international technology transfer and knowledge production, and enhance innovation in pursuit of research-led socio-economic development. • To identify, grow and sustain a portfolio of niche high-potential STI capabilities for sustainable development and the greening of society and the economy. • To identify, grow and sustain a portfolio of niche high-potential R&D capabilities that improves the competitiveness of existing and emerging economic sectors and that facilitates the development of new targeted industries with growth potential in advanced manufacturing, chemicals, advanced metals and ICTs. • To inform and influence technology choices and how alternative technologies can be used to transform rural and socio-economic development, government planning and service delivery, and the building of sustainable human settlements.

Programme objectives	DST strategic outcome-oriented goals
<ul style="list-style-type: none"> • Support RDI initiatives in strategic research areas, namely, space, energy, biosciences and innovation research to enhance our knowledge and skills base. • To create and support multi-directional policy and institutional linkages between R&D and commercialisation in order to increase the commercialisation potential of R&D outcomes. • To promote and enhance research productivity to increase South Africa's world share of knowledge outputs. • To build a science, engineering and technology (SET) human capital pipeline to ensure increased availability of researchers and innovators for South Africa's global competitiveness. • To promote and enhance research productivity to increase South Africa's world share of knowledge outputs. • To support the generation, application and dissemination of social scientific knowledge, high-end human capital development in the social sciences and humanities, and stronger links between knowledge and policy. • To identify, grow and sustain a portfolio of niche high-potential R&D capabilities that improves the competitiveness of existing and emerging economic sectors and that facilitates the development of new targeted industries with growth potential in advanced manufacturing, chemicals, advanced metals and ICTs. • To identify, grow and sustain a portfolio of niche high-potential STI capabilities for sustainable development and the greening of society and the economy. 	<p>To enhance South Africa's knowledge-generation capacity in order to produce world-class research outputs and turn some advanced findings into innovation products and processes</p>

Programme objectives	DST strategic outcome-oriented goals
<ul style="list-style-type: none"> • To build a SET human capital pipeline to ensure increased availability of researchers and innovators for South Africa's global competitiveness. • To support the generation, application and dissemination of social scientific knowledge, high-end human capital development in the social sciences and humanities, and stronger links between knowledge and policy. • To identify, grow and sustain a portfolio of niche high-potential R&D capabilities that improves the competitiveness of existing and emerging economic sectors and that facilitates the development of new targeted industries with growth potential in advanced manufacturing, chemicals, advanced metals and ICTs. • To identify, grow and sustain a portfolio of niche high-potential STI capabilities for sustainable development and the greening of society and the economy. 	<p>To develop appropriate STI human capital to meet the needs of society</p>
<ul style="list-style-type: none"> • To ensure the availability of appropriate infrastructure for the enhancement of RDI competitiveness. • To increase access to global knowledge and STI networks that will result in international technology transfer and a competent and equitable pool of SET skills to support the NSI. • To identify, grow and sustain a portfolio of niche high-potential STI capabilities for sustainable development and the greening of society and the economy. 	<p>To build world-class STI infrastructure to extend the frontiers of knowledge, train the next generation of researchers and enable technology development and transfer as well as knowledge interchange</p>

Programme objectives	DST strategic outcome-oriented goals
<ul style="list-style-type: none"> • To increase the number of students participating in international cooperative STI research projects that will contribute to a competent and equitable pool of SET skills in support of the NSI. • To increase leverage of foreign STI funds that will stimulate international technology transfer and knowledge production, and enhance innovation in pursuit of research-led socio-economic development. • To increase access to global knowledge and STI networks that will result in international technology transfer and a competent and equitable pool of SET skills to support the NSI. • To increase South Africa and foreign funds spent on S&T-based socio-economic development in Africa. • To identify, grow and sustain a portfolio of niche high-potential R&D capabilities that improves the competitiveness of existing and emerging economic sectors and that facilitates the development of new targeted industries with growth potential in advanced manufacturing, chemicals, advanced metals and ICTs. • To identify, grow and sustain a portfolio of niche high-potential STI capabilities for sustainable development and the greening of society and the economy. • To support the generation, application and dissemination of social scientific knowledge, high-end human capital development in the social sciences and humanities, and stronger links between knowledge and policy. 	<p>To position South Africa as a strategic international RDI partner and destination through the exchange of knowledge, capacity and resources between South Africa and its regional and other international partners, thereby strengthening the NSI</p>

4 . Overview of the 2012/13 Budget and MTEF estimates

Table 2: Department of Science and Technology expenditure estimates

R thousand			Actual outcome			Adjusted appropriation	Revised estimate	Medium-term estimates			
								Estimated baseline			
2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15					
Administration	141 035	159 122	188 858	195 701	195 701	202 651	212 271	230 465			
Research Development and Innovation	852 974	1 141 350	802 774	854 610	854 610	1 156 372	1 317 662	1 439 815			
International Cooperation and Resources	136 314	117 474	131 384	137 194	137 194	141 226	152 124	161 105			
Human Capital and Knowledge Systems	1 454 698	1 591 357	1 754 144	1 950 427	1 950 427	2 035 896	2 378 902	2 588 974			
Socio-Economic Partnerships	1 118 447	1 174 554	1 174 742	1 269 071	1 269 071	1 419 785	1 516 666	1 600 464			
Total	3 703 468	4 183 857	4 051 902	4 407 003	4 955 930	5577 625	6 020 823	5 819 8			
Compensation of employees	141 585	167 488	190 629	227 636	227 636	242 302	253 366	275 048			
Goods and services	118 255	116 757	140 736	137 667	137 667	151 191	164 081	171 930			
Transfers and subsidies	3 440 230	3 891 873	3 709 582	4 038 442	4 038 442	4 559 018	5 156 580	5 570 030			
Payments for capital assets	3 322	7 659	10 603	3 258	3 258	3 419	3 598	3 815			
Payments for financial assets	78	80	19	4 407 0	4 407 0	4 896 9	5 487 6	5 819 8			
Total	3 703 468	4 183 857	4 051 902	4 407 003	4 955 930	5 577 625	6 020 823	6 020 823			

PROGRAMME PERFORMANCE PLANS

5. Programme 2: Research, Development and Innovation

Purpose: This Programme facilitates knowledge generation and exploitation through R&D in key priority areas, namely, space science, bioeconomy, and energy. It also promotes the exploitation of South Africa's knowledge stock through stimulating the development of innovative products and services, and the commercialisation thereof, where appropriate.

5.1.1 Strategic objectives

- To support RDI initiatives in strategic research areas (i.e. space, energy, bio-sciences and innovation research) to enhance South Africa's knowledge and skills base.
- To create and support multidirectional policy and institutional linkages between R&D and commercialisation in order to increase the commercialisation potential of R&D outcomes.
- To promote coordination among NSI institutions in space, energy and bioscience-related research that will enable the effective and efficient use of resources and the pooling of expertise.

5.1.2 Subprogrammes

- **Space Science and Technology** focuses on creating the necessary strategic and institutional regimes for the development a viable space programme and an earth observation system. This includes providing strategic direction on key aspects linked to the construction of the Square Kilometre Array (SKA) dem-

onstrator telescope and related activities to ensure that Africa is well positioned to host the SKA. Targeted national space initiatives are intended to harness the benefits of space application for socioeconomic growth and sustainable development.

- **Hydrogen and Energy** provides leadership in long term and cross-cutting RDI in the energy sector. It plays a key role in developing a sustainable and modern South African energy knowledge base and industry that will ensure broader socio-economic benefits for the country from the nascent global hydrogen economy and renewable energy resources.
- **Biotechnology and Health Innovation** provides leadership for developing a world-class bioeconomy in South Africa. This will be achieved through innovation instruments that provide financial, intellectual property and innovation management support.
- **Innovation Instruments and Planning** 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 designing and creating policy and institutional structures that facilitate technology development and its progression into national and international markets.

5.1.3 Annual performance information and MTEF estimates

Table 3: Programme 2 annual performance information for 2012/13

Outputs	Performance indicator(s)	Strategic target	Strategic objective: Support RDI initiatives in strategic research areas, namely, space, energy, biosciences and innovation research to enhance South Africa's knowledge and skills base						
Audited/Actual performance	Performance	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
		Medium-term targets							
Knowledge stock developed in and undergraduate students and postgraduate students and technicians funded by 31 March 2015	Number of undergraduate students and postgraduate students and technicians funded in space, bioscience, and energy-related research	870	196	229	150	220	274	286	
	and energy-related bioscience, and research	undergraduate students and postgraduate students and technicians funded by 31 March 2015	undergraduate students and postgraduate students and technicians funded by 31 March 2015	undergraduate students and postgraduate students and technicians funded by 31 March 2015	undergraduate students and postgraduate students and technicians funded by 31 March 2015	undergraduate students and postgraduate students and technicians funded by 31 March 2015	undergraduate students and postgraduate students and technicians funded by 31 March 2015	undergraduate students and postgraduate students and technicians funded by 31 March 2015	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
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		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150	150	150	150	150	
		150 interns	150	150</					

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance		Estimated performance	Medium-term targets
			2008/09	2009/10		
	Number of new research chairs and centers of competence supported in, bioscience and energy-related research	6 research chairs and innovation research and initiatives in, bioscience and energy-related fields financially supported by 31 March 2015	3 health innovation research and initiatives (HIV and Aids, Malaria, TB) financially supported	1 health innovation research and initiatives in non-communicable diseases	2 research chairs financially supported	5 research chairs supported by 31 March 2012
	Number of funded initiatives as a result of R&D publications resulting from R&D funded initiatives by 31 March 2015	20 publications resulting from R&D funded initiatives by 31 March 2015	-	10 publications	12 papers published in peer-reviewed journals and a book chapter written that R&D funded initiatives resulted from	6 publications resulting from R&D funded initiatives by 31 March 2012
					6 publications resulting from R&D funded initiatives by 31 March 2013	6 publications resulting from R&D funded initiatives by 31 March 2013
					6 publications resulting from R&D funded initiatives by 31 March 2014	6 publications resulting from R&D funded initiatives by 31 March 2014
					8 publications resulting from R&D funded initiatives by 31 March 2015	8 publications resulting from R&D funded initiatives by 31 March 2015

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance		Estimated performance	Medium-term targets	
			2008/09	2009/10	2010/11	2011/12	2012/13
Infrastructure to undertake research, development and innovation	Number of MeerKAT antennae constructed	Construction of the first 20 dish antennae of the 64-dish MeerKAT	Karoo Array prototype KAT-7 completed	Preparation of KAT-7 infrastructure and construction facilities completed	Construction of KAT-7 completed	Roads, electrical reticulation and MeerKAT construction site camp contracts awarded by 31 March 2012	1 MeerKAT antenna designed and aligned to SKA design requirements completed by 31 March 2013
Jobs created in the Northern Cape	Number of jobs created in construction	400 jobs created in the Northern Cape	480 jobs created in the Northern Cape	112 jobs created in the Northern Cape	-	100 jobs created in the Northern Cape by 31 March 2012	200 jobs created in the Northern Cape by 31 March 2013
Construction in the Northern Cape by 31 March 2015	100 construction jobs created in the Northern Cape by 31 March 2014	100 construction jobs created in the Northern Cape by 31 March 2015	100 construction jobs created in the Northern Cape by 31 March 2014	100 construction jobs created in the Northern Cape by 31 March 2015	100 construction jobs created in the Northern Cape by 31 March 2014	100 construction jobs created in the Northern Cape by 31 March 2013	100 construction jobs created in the Northern Cape by 31 March 2012

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance					Estimated performance	Medium-term targets			
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15			
Strategic objective: To create and support multi-directional policy and institutional linkages between R&D and commercialisation in order to increase the commercialisation potential of R&D outcomes												
Research, development and innovation institutions and satellite offices established	NIPMO established as a government component (GC) and staff members permanently appointed	NIPMO established as a GC by 31 March 2014					NIPMO interim operational phase completed by 31 March 2012	NIPMO GC structure approved by DPSA by 31 March 2014	Head of NIPMO appointed by the Minister	NIPMO approved by staff appointed permanent by 31 March 2014	NIPMO Advisory Board and Dispute Panel appointed by the Minister by 21 March 2013	

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance			Estimated performance	Medium-term targets	
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Commercialisation of products and services promoted	Number of new technology-based enterprises that promotes commercialisation supported	14 OTTs established/recapitalised by 31 March 2015				2 regional OTTs established (Eastern Cape and KwaZulu-Natal)	1 OTT established at UWC	4 OTTs recapitalised (Wits, UJ, ARC, UCT)
Number of new technology-based enterprises supported	15 new technology-based enterprises supported through TIA by March 2015	14 OTTs established/recapitalised by 31 March 2015				4 OTTs established and/or recapitalised by 31 March 2012	4 OTTs established and/or recapitalised by 31 March 2013	4 OTTs established and/or recapitalised by March 2014
5 new technology-based enterprises supported through TIA by 31 March 2015	5 new technology-based enterprises supported through TIA by 31 March 2014	6 OTTs established and/or recapitalised by 31 March 2015				4 OTTs established and/or recapitalised by 31 March 2012	4 OTTs established and/or recapitalised by 31 March 2013	4 OTTs established and/or recapitalised by March 2014

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance					Estimated performance	Medium-term targets
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Strategic objective: To promote coordination among NSI institutions in space, energy and bioscience-related research that will enable the effective and efficient use of resources and the pooling of expertise									
Policy briefs and concept documents developed in space, energy, key RDI technology-mission-related fields	Number of policy briefs and concept documents developed in space, energy, bioscience and technology commercialisation-related fields	10 policy briefs and concept documents developed by 31 March 2015							
	</								

Table 4: Expenditure estimates

Research, Development and Innovation detail by subprogramme							
R thousand			Actual outcome		Adjusted appropriation	Medium-term estimates	
2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
Space Science	340 999	575 166	88 607	129 434	380 146	496 315	571 040
Hydrogen and Energy	139 650	146 755	130 844	140 578	147 887	155 500	164 646
Biotechnology and Health	228 447	253 907	153 974	112 920	131 460	139 229	145 913
Innovation Planning and Instruments	143 878	165 522	429 349	471 678	496 879	526 618	558 216
Total	852 974	1 141 350	802 774	854 610	1 156 372	1 317 662	1 439 815
Compensation of employees	13 572	17 136	21 156	31 676	31 067	33 720	37 390
Goods and services	9 936	15 374	16 036	19 152	22 857	23 790	23 570
Total transfer and subsidies	829 262	1 108 500	763 848	803 562	1 102 217	1 259 909	1 378 596
Total payment for capital assets	203	340	1 688	220	231	243	259
Total	852 974	1 141 350	802 774	854 610	1 156 372	1 317 662	1 439 815



Programme 3



5.2 Programme 3: International Cooperation and Resources

Purpose: This Programme aims to strategically develop, promote and manage international relationships, opportunities and S&T agreements that strengthen the NSI and enable an exchange of knowledge, capacity and resources between South Africa and its regional and international partners.

5.2.2 Subprogrammes

- **Overseas Bilateral Cooperation** promotes and facilitates collaborative activities and leverages resources in support of the NSI from countries outside Africa, with a specific focus on developing a knowledge-driven economy.
 - **Multilateral Cooperation and Africa** advances and facilitates South Africa's participation in strategic African bilateral agreements and multilateral organisations on STI, so as to strengthen the NSI and to achieve shared economic and social development in the region and the continent.
 - **International Resources** works to increase the flow of international resources into the country by creating conditions for access to international STI skills and global projects.
- ### 5.2.1 Strategic objectives
- To increase leverage of foreign STI funds that will stimulate international technology transfer and knowledge production, and enhance innovation in pursuit of research-led socio-economic development.
 - To increase South African and foreign funds spent on S&T-based socio-economic development in Africa.
 - To increase access to global knowledge and STI networks that will result in international technology transfer and a competent and equitable pool of SET skills to support the NSI.
 - To increase the number of South African students participating in international cooperative STI research projects that will contribute to a competent and equitable pool of SET skills in support of the NSI.

5.2.3 Annual performance information and MTEF estimates

Table 5 Programme 3 annual performance information for 2012/13

Output	Performance in- dicator	Strategic target	Audited/actual performance						Estimated performance	Medium-term targets		
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15			
Strategic objective: To increase leverage of foreign STI funds that will stimulate international technology transfer and knowledge production, and enhance innovation in pursuit of research-led socio-economic development												
Foreign STI funds leveraged	Amount of foreign STI funds leveraged	R520m for-leveraged STI funds by 31 March 2015	R180m leveraged	R472m leveraged	R327m leveraged	R285m foreign STI funds leveraged by 31 March 2012	R240m for-leveraged STI funds by 31 March 2013	R140m foreign STI funds leveraged by 31 March 2014	R140m foreign STI funds leveraged by 31 March 2015			
Strategic objective: To increase South African and foreign funds spent on S&T-based socio-economic development in Africa												
South African and foreign funds spent on S&T-based socio-economic development in Africa	Amount of South African and foreign funds spent on S&T-based socio-economic development in Africa	R165m South African and foreign funds spent on S&T-based socio-economic development in Africa by 31 March 2015	R12,4m South African and foreign funds spent on S&T-based socio-economic development in Africa	R20,6m South African and foreign funds spent on S&T-based socio-economic development in Africa	R40,8m South African and foreign funds spent on S&T-based socio-economic development in Africa	R45m South African and foreign funds spent on S&T-based socio-economic development in Africa by 31 Mrch 2012	R46,5m South African and foreign funds spent on S&T-based socio-economic development in Africa by 31 March 2013	R57,5m South African and foreign funds spent on S&T-based socio-economic development in Africa by 31 March 2014	R61m South African and foreign funds spent on S&T-based socio-economic development in Africa by 31 March 2015			

Output	Performance in- dicator	Strategic target	Audited/actual performance			Estimated performance	Medium-term targets	
			2008/09	2009/10	2010/11		2011/12	2012/13
							2013/14	2014/15

Strategic objective: To increase access to global knowledge and STI networks that will result in international technology transfer and a competent and equitable pool of SET skills to support the NSI

Foreign par- ticipants in global knowl- edge and STI networks	Number of foreign participants in global knowledge and STI networks	2 630 foreign participants in global knowl- edge and STI networks by 31 March 2015	2 231 for- eign par- ticipants in global knowledge and STI net- works	3 880 for- eign par- ticipants in global knowledge and STI networks	2 513 for- eign par- ticipants in global knowledge and STI net- works	3 380 foreign participants in global knowl- edge and STI networks by 31 March 2012	800 ² foreign participants in global knowl- edge and STI networks by 31 March 2013	930 foreign par- ticipants in global knowledge and STI networks by 31 March 2014	900 foreign participants in global knowledge and STI net- works by 31 March 2015
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Strategic objective: To increase the number of South African students participating in international cooperative STI research projects that will contribute to a competent and equitable pool of SET skills in support of the NSI

South African students par- ticipating in international cooperative STI research projects	Number of South Af- rican students partici- pating in international cooperative STI re- search projects	1 420 South African stu- dents par- ticipating in international cooperative STI research projects by 31 March 2015	401 South African students participated in interna- tional coop- erative STI research projects	633 South African students participated in interna- tional coop- erative STI research projects	514 South African students participated in interna- tional coop- erative STI research projects	730 South Af- rican students participating in international cooperative STI research proj- ects by 31 March 2012	450 South Af- rican students participating in international cooperative STI research proj- ects by 31 March 2013	500 South African students partici- pating in interna- tional cooperative STI research projects by 31 March 2014	470 South African students participating in interna- tional coop- erative STI research projects by 31 March 2015
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2 The reduction in target by comparison to previous years results from a change in the reporting base.

Table 6: Expenditure estimates

International Cooperation and Resources detail by subprogramme							
R thousand	Actual outcome			Adjusted appropriation	Medium-term estimates		
	2008/09	2009/10	2010/11		2011/12	2012/13	2013/14 2014/15
Multilateral Cooperation and Africa	57 194	54 601	58 236	59 955	58 956	62 496	66 260
International Resources	42 163	39 238	39 853	47 212	50 550	53 212	56 325
Overseas Bilateral Cooperation	36 957	23 635	33 295	30 027	31 720	36 416	38 520
Total	136 314	117 474	131 384	137 194	141 226	152 124	161 105
Compensation of employees	30 393	27 915	31 154	30 531	35 467	40 959	43 418
Goods and services	18 543	13 681	19 924	23 277	25 818	27 308	28 706
Total transfer and subsidies	86 913	75 642	79 786	82 876	79 402	83 290	88 381
Total payment for capital assets	465	236	480	514	539	567	600
Total	136 314	117 474	131 384	137 194	141 226	152 124	161 105



Programme 4



5.3 Programme 4: Human Capital and Knowledge Systems

Purpose: This Programme provides leadership in the creation of an innovative and competitive society with highly skilled human capital, cutting-edge knowledge and research infrastructure.

Focus areas include astronomy, archaeology and palaeontology. The research chairs at South African universities, centres of excellence, and a postdoctoral fellowship programme are instruments that the Department will use in these focus areas.

5.3.1 Strategic objectives

- To build a SET human capital pipeline to ensure increased availability of researchers and innovators for South Africa's global competitiveness.
- To promote and enhance research productivity to increase South Africa's world share of knowledge outputs.
- To identify and support the development of new and emerging research areas and technologies for their application in the improvement of quality of life and enhancement of economic competitiveness.
- To ensure the availability of appropriate infrastructure for the enhancement of RDI competitiveness.
- To promote and develop RDI in indigenous knowledge systems (IKS) for improved quality of life.

5.3.2 Subprogramme

- **Human Capital and Science Platforms** conceptualises, formulates and implements programmes that address the availability of human capital for STI, produces new knowledge to build the knowledge resources of the country, and interfaces positively with the institutions that are key in the production of S&T knowledge and human resources for the NSI.

- **Indigenous Knowledge Systems** promotes the role of IKS in national R&D programmes to strengthen their contribution to STI. The focus is on providing an appropriate regulatory and policy environment, the development of a national recordal system, an appropriate accreditation and certification system for indigenous knowledge holders, and a bioprospecting and product development platform for indigenous knowledge.
- **Emerging Research Areas and Infrastructure** facilitates the strategic implementation of research equipment and infrastructure to promote knowledge production in areas of national priority and to sustain R&D-led innovation. The subprogramme also promotes the development of new and emerging research areas through supporting the requisite research and infrastructure capacity in these areas. Funding is provided to institutions and national programmes such as the South African National Research Network, the Centre for High Performance Computing, the national nanotechnology innovation centres, the National Equipment Programme (NEP), emerging research areas (nanotechnology, photonics and synthetic biology) and new research areas such as aptamers.

5.3.3 Annual performance information and MTEF estimates

Table 7: Programme 4 annual performance information for 2012/13

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance							Estimated Performance		Medium-term targets	
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15				
Strategic objective: To build a SET human capital pipeline to ensure increased availability of researchers and innovators for South Africa's global competitiveness.													
Postgraduate research students supported through NRF-managed programmes	Cumulative number of postgraduate research students supported	19 200 honours, master's and PhD students supported by 31 March 2015	5 060	5 131	5 945	6 600	6 100	6 400	6 700	840 postgraduate students supported as interns in SETI work environments by 31 March 2015	570 postgraduate students supported as interns in SETI work environments by 31 March 2014	550 postgraduate students supported as interns in SETI work environments by 31 March 2013	570 postgraduate students supported as interns in SETI work environments by 31 March 2014
Postgraduate students supported through research students and PhD students supported	Number of post-graduate students supported as interns in SETI work environments	1 960 postgraduate students supported as interns in SETI work environments by 31 March 2015	92 post-graduate students supported as interns in SETI work environments	160 post-graduate students supported as interns in SETI work environments	272 post-graduate students supported as interns in SETI work environments	275 postgraduate students supported as interns in SETI work environments	550 postgraduate students supported as interns in SETI work environments	570 postgraduate students supported as interns in SETI work environments	840 postgraduate students supported as interns in SETI work environments by 31 March 2015	570 postgraduate students supported as interns in SETI work environments by 31 March 2014	550 postgraduate students supported as interns in SETI work environments by 31 March 2013	570 postgraduate students supported as interns in SETI work environments by 31 March 2014	
Postgraduate students supported through research students and PhD students supported	Number of post-graduate students supported as interns in SETI work environments	1 960 postgraduate students supported as interns in SETI work environments by 31 March 2015	92 post-graduate students supported as interns in SETI work environments	160 post-graduate students supported as interns in SETI work environments	272 post-graduate students supported as interns in SETI work environments	275 postgraduate students supported as interns in SETI work environments	550 postgraduate students supported as interns in SETI work environments	570 postgraduate students supported as interns in SETI work environments	840 postgraduate students supported as interns in SETI work environments by 31 March 2015	570 postgraduate students supported as interns in SETI work environments by 31 March 2014	550 postgraduate students supported as interns in SETI work environments by 31 March 2013	570 postgraduate students supported as interns in SETI work environments by 31 March 2014	

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance		Estimated Performance	Medium-term targets
			2009/10	2010/11		
People and S&T institutions participated in science awareness and engagement programmes	Number of people reached through DST-led science awareness and engagement programmes	1,202m people participated in science awareness programmes by 31 March 2015	238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes by 31 March 2012	375 000 people participated in science awareness and engagement programmes by 31 March 2012	422 700 people (360 000 learners and 55 000 general public) participated in science awareness and engagement programmes by 31 March 2015
At least 18 public higher education institutions and 7 science and 6 national research facilities participating in DST-led science awareness by 31 March 2015			238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes by 31 March 2012	375 000 people participated in science awareness and engagement programmes by 31 March 2012	422 700 people (360 000 learners and 55 000 general public) participated in science awareness and engagement programmes by 31 March 2015
Cumulative number of S&T institutions involved in DST-led science awareness			238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes by 31 March 2012	375 000 people participated in science awareness and engagement programmes by 31 March 2012	422 700 people (360 000 learners and 55 000 general public) participated in science awareness and engagement programmes by 31 March 2015
4 higher education institutions, 4 science councils and 6 national research facilities participated in DST-led science awareness			238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes by 31 March 2012	375 000 people participated in science awareness and engagement programmes by 31 March 2012	422 700 people (360 000 learners and 55 000 general public) participated in science awareness and engagement programmes by 31 March 2015
7 higher education institutions, 4 science councils and 6 national research facilities participated in DST-led science awareness by 31 March 2013			238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes by 31 March 2012	375 000 people participated in science awareness and engagement programmes by 31 March 2012	422 700 people (360 000 learners and 55 000 general public) participated in science awareness and engagement programmes by 31 March 2015
12 higher education institutions, 7 science councils and 6 national research facilities participated in DST-led science awareness by 31 March 2014			238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes by 31 March 2012	375 000 people participated in science awareness and engagement programmes by 31 March 2012	422 700 people (360 000 learners and 55 000 general public) participated in science awareness and engagement programmes by 31 March 2015
18 higher education institutions, 7 science councils and 6 national research facilities participated in DST-led science awareness by 31 March 2015			238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes by 31 March 2012	375 000 people participated in science awareness and engagement programmes by 31 March 2012	422 700 people (360 000 learners and 55 000 general public) participated in science awareness and engagement programmes by 31 March 2015

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance	Estimated performance	Medium-term targets
	Science, technology, engineering, and mathematics, and innovation (STE-MI) promotion and engagement strategy for the NSI, and its implementation plan approved by the Minister	STEMI promotion and engagement strategy for the NSI and its implementation plan for the STEMI promotion and engagement strategy for the NSI by 31 March 2014	2008/09	2011/12	2014/15
		Approved implementation plan for the STEMI promotion and engagement strategy for the NSI by 31 March 2014	2009/10	2010/11	2013/14
		—		Key principles informing draft STEMI promotion and engagement strategy for the NSI developed by 31 March 2012	2012/13
		—		Draft STEMI promotion and engagement strategy for the NSI completed by 31 March 2013	2013/14
		—		Approved promotion and engagement strategy for the NSI, and its implementation plan by 31 March 2014	2014/15
Researchers supported through NRF-managed programmes	Total number of researchers supported through NRF-managed programmes	8 100 research-ers supported through NRF-managed pro-grammes by 31 March 2015	2 054 re-grammes	2 422 re-grammes	2 600 re-grammes
		2 054 re-grammes	2 054 re-grammes	2 054 re-grammes	2 054 re-grammes
		2 422 re-grammes	2 422 re-grammes	2 422 re-grammes	2 422 re-grammes
		2 600 re-grammes	2 600 re-grammes	2 600 re-grammes	2 600 re-grammes
		2 500 research-ers supported through NRF-managed pro-grammes by 31 March 2012	2 500 research-ers supported through NRF-managed pro-grammes by 31 March 2012	2 500 research-ers supported through NRF-managed pro-grammes by 31 March 2012	2 500 research-ers supported through NRF-managed pro-grammes by 31 March 2012
		2 600 research-ers supported through NRF-managed pro-grammes by 31 March 2013	2 600 research-ers supported through NRF-managed pro-grammes by 31 March 2013	2 600 research-ers supported through NRF-managed pro-grammes by 31 March 2013	2 600 research-ers supported through NRF-managed pro-grammes by 31 March 2013
		2 700 research-ers supported through NRF-managed pro-grammes by 31 March 2014	2 700 research-ers supported through NRF-managed pro-grammes by 31 March 2014	2 700 research-ers supported through NRF-managed pro-grammes by 31 March 2014	2 700 research-ers supported through NRF-managed pro-grammes by 31 March 2014
		2 800 research-ers supported through NRF-managed pro-grammes by 31 March 2015	2 800 research-ers supported through NRF-managed pro-grammes by 31 March 2015	2 800 research-ers supported through NRF-managed pro-grammes by 31 March 2015	2 800 research-ers supported through NRF-managed pro-grammes by 31 March 2015
Strategic objective: Promote and enhance research productivity to increase South Africa's world share of knowledge outputs					

Strategic objective: Promote and enhance research productivity to increase South Africa's world share of knowledge outputs

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance					Estimated Performance	Medium-term targets
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Established nano-science, photon-ics and synthetic biology teaching platforms	Number of teaching and training plat-forms established	March 2014	2 teaching and training plat-forms estab-lished by 31 March 2014	—	—	—	1 nanoscience teaching plat-form established (offering two-year master's degree) by 31 March 2014	1 photonics technician teaching and training plat-form estab-lished (offering three-year diploma) by 31 March 2013	—
	Number of post-graduate students graduating from teaching platforms	30 MSc stu-dents gradu-ate from the established nanosciences teaching plat-form by 31 March 2015	—	—	—	—	15 students graduated from nanoscience plat-form by 31 March 2014	15 students graduated from the established nanoscience teaching plat-forms by 31 March 2015	15 students graduated from the established nanoscience teaching plat-forms by 31 March 2015
	First intake of 15 students for industrial physics di-ploma by 31 March 2015	—	—	—	—	—	—	—	—
	Number of post-graduate students graduating from teaching platforms	30 MSc stu-dents gradu-ate from the established nanosciences teaching plat-form by 31 March 2015	—	—	—	—	—	—	—
	First intake of 15 students for industrial physics di-ploma by 31 March 2015	—	—	—	—	—	—	—	—

Strategic objective: To identify and support the development of new and emerging research areas and technologies for their application in the improve-ment of quality of life and enhancement of economic competitiveness

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance			Estimated Performance	Medium-term targets
			2008/09	2009/10	2010/11		
Flagship projects in photonics, synthetic biology and nanotechnology supported to increase RDI productivity in photonics, synthetic biology and nanotechnology	Number of new and existing flagship projects supported	17flagship projects in nanotechnology and photonics and synthetic biology supported to increase RDI productivity in photonics, synthetic biology and nanotechnology	–	–	–	Draft South African BioDesign (SABDI) projects identified and funded by 30 October 2012 incorporate synthetic biology developed	15 existing flagship projects in nanotechnology, photonics and synthetic biology funded by 31 March 2015 5 existing photonics and 7 existing nanotechnology flagship projects supported by 31 March 2013
							5 new photonics flagship projects identified and funded by 30 October 2013 5 existing photonics and 7 existing nanotechnology flagship projects supported by 31 March 2013
							10 peer-reviewed publications on photonics published 10 peer-reviewed publications on synthetic biology published 10 peer-reviewed publications on nanotechnology published by 31 March 2013
							10 peer-reviewed publications on photonics published 10 peer-reviewed publications on synthetic biology published 10 peer-reviewed publications on nanotechnology published by 31 March 2013
							30 peer-reviewed publications on photonics and 1 patent on synthetic biology filed by 31 March 2015

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance		Estimated Performance	Medium-term targets	
			2009/10	2010/11		2011/12	2012/13
Research and innovation outputs (prototypes, publications and students) from nanotechnology innovation centres (NICs)	Number of research innovation outputs (prototypes and patents produced by NICs and other nanotechnology development programmes	3 prototypes 3 patents 30 publications by 31 March 2015	3 formal patent disclosures and 15 publications	1 prototype product in the form of patent that contains modified nano-clay was developed	1 prototype and 10 publications resulting from research and innovation by 31 March 2012	1 prototype, 10 peer-reviewed publications and 1 patent resulting from research and innovation internationally filed by 31 March 2013	1 prototype, 10 peer-reviewed publications and 1 patent resulting from research and innovation internationally filed with international office by 31 March 2014
Number of students graduated through co-supervision at NICs and other nanotechnology development programmes	37 postgraduate students graduated through co-supervision at NICs (25 MSc and 12 PhD) by 31 March 2015	23 Post-graduate students graduated through co-supervision at NICs and other nanotechnology development programmes			10 postgraduate students graduated (7 MSc and 3 PhD) by 31 March 2012	10 postgraduate students graduated (7 MSc and 3 PhD) by 31 March 2013	12 postgraduate students (8 MSc and 4 PhD) graduated by 31 March 2014
15 postgraduate students (10 MSc and 5 PhD) by 31 March 2015							

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance							Estimated Performance	Medium-term targets
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15		
Strategic objective: To ensure the availability of appropriate infrastructure for enhancement of RDI competitiveness											
Research equip-ment grants awarded to in-crease knowledge outputs	Number of research equipment grants awarded	grants awarded by 31 March 2015	31 NEP/ National Nanotech- nology Equipment Pro- gramme (NNEP) research equipment grants awarded	27 NEP/ NNEP research equipment grants awarded	36 NEP/ NNEP research equipment grants awarded	50 research equipment grants awarded by 31 March 2012	50 research equipment grants awarded by 31 March 2013	60 research equipment grants awarded by 31 March 2014	60 research grants awarded by 31 March 2015		

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance	Estimated Performance	Strategic objective: To promote and develop RDI in indigenous knowledge systems for the improved quality of life									
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15					
Operational broadband network for all research and academic institutions	Increased availability of broadband connectivity for RDI	85 academic sites connected by 31 March 2015	32 sites connected to South African National Research Network (SANREN)	32 sites connected to SANREN	50 sites connected to SANREN	27 academic sites connected to SANREN by 31 March 2012	42 academic sites connected to SANREN by 31 March 2013	22 academic sites connected to SANREN by 31 March 2014	21 academic sites connected to SANREN by 31 March 2015					
An Act for the protection and preservation of indigenous knowledge (IK)	Legislation for the protection and preservation of IK	An Act for the protection and preservation of indigenous knowledge (IK) passed by 2015	Submission of comments to the Department of Trade and Industry on IP amendment Bill	Draft legislative framework developed by IKS Office (NIKSO)	Transposition of draft legislative framework into legislation by 31 March 2011	Approved draft legislation on the protection of IK by the Minister for consultation by 31 March 2012	Cabinet Memo-randum on draft legislation on the protection of IK approved by Minister by 31 March 2013	Bill on the protection of IK approved by Parliament and signed by the President by 31 March 2014	Regulations on the protection of IK approved by the Minister by 31 March 2015					

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance			Estimated Performance	Medium-term targets		
			2008/09	2009/10	2010/11		2011/12	2012/13	2013/14
A fully functioning bioprospecting and product development platform for the bioeconomy	A fully functioning National Bio-prospecting Platform established for bioeconomy es-	A fully functioning National Bio-prospecting Platform for bioprospecting and product development established by 31 March 2015	IKS Bio-prospecting and product development Platform established	3 projects under the IKS bio-prospecting Platform	5 new projects in traditional medicines, cosmetics and nutraceuticals funded by 31 March 2011	Programme 2 and 4 funding of the projects and development of conceptual framework for bioprospecting platform for the bioeconomy by 31 March 2012	A National Bio-prospecting Platform approved by Minister 31 March 2013	Initiation of the centre of competence (CoC) by 31 March 2014	National Bio-prospecting Institute established by 31 March 2015
Number of knowledge managers trained in documentation, data and intellectual property rights management	6 knowledge managers trained by 31 March 2015	—	—	—	—	2 knowledge managers trained in data documentation and intellectual property rights management by 31 March 2012	2 knowledge managers trained in data documentation and intellectual property rights management by 31 March 2013	2 knowledge managers trained in data documentation and intellectual property rights management by 31 March 2014	2 knowledge managers trained in data documentation and intellectual property rights management by 31 March 2015

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance		Estimated Performance	Medium-term targets	
			2009/10	2010/11		2011/12	2012/13
A fully functioning National Bioprospecting Platform for the Bioeconomy established	A fully functioning National Bio-prospecting platform for the Bioeconomy established and consolidated by the establishment of CoC by 31 March 2015	National Bio-prospecting platform for the Bioeconomy established and consolidated by the establishment of CoC by 31 March 2015			A Na-tional Bio-prospecting Platform work approved by Minister 31 March 2012	A National Bio-prospecting Platform approved by Minister 31 March 2013	Initiated the establishment of CoC by 31 March 2014
Number of independent agro-businesses based on IKS products	2 independent agro-businesses based on two products established by 31 March 2015	IKS bio-prospecting and product development platform pilot established by 31 March 2015			3 projects under the IKS bio-prospecting platform funded	5 new projects in traditional medicines, cosmetics and nutraceuticals funded	3 projects under the IKS bio-prospecting platform funded
Clinical studies on 2 candidate products initiated	2 independent agro-businesses based on two products established by 31 March 2015	2 independent agro-businesses based on two products established by 31 March 2015			2 clinical studies completed by 31 March 2012	Production candidate products piloted by 31 March 2013	2 candidate products specialised by 31 March 2014

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance	Estimated performance	Medium-term targets
	Increased number of leads identified for product development	20 cumulative leads identified for product development by 31 March 2015	IKS bio-prospecting and product development platform established	3 projects under the IKS bio-prospecting platform funded	9 leads identified for product development
	Increased number of research skills developed	IKS Bioprospecting and PhD IKS research students in IKS projects by 31 March 2015		12 MSc and PhD students registered in IKS research projects by 31 March 2011	5 IKS community of practice skilled worker practitioners developed by 31 March 2011
					</

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance			Estimated Performance	Medium-term targets
			2008/09	2009/10	2010/11		
Technology transfer to communities	Number of patents locally registered	8 patents locally registered by 31 March 2015				1 patent locally filed by 31 March 2012	3 patents locally registered by 31 March 2013
	Number of community-based technology transfer projects supported.	6 community-based technology transfer projects supported by 31 March 2015				3 community-based technology transfer projects initiated by 31 March 2012	2 community-based technology transfer projects supported by 31 March 2014
Technology transfer to communities	Number of patents locally registered	8 patents locally registered by 31 March 2015				1 patent locally filed by 31 March 2012	3 patents locally registered by 31 March 2013
	Number of community-based technology transfer projects supported.	6 community-based technology transfer projects supported by 31 March 2015				3 community-based technology transfer projects initiated by 31 March 2012	2 community-based technology transfer projects supported by 31 March 2014

Table 8: Expenditure estimates

Human Capital and Knowledge System detail by subprogramme							
R thousand	2008/09	2009/10	2010/11	2011/12	Adjusted ap- propriation	Medium-term estimates	
						2012/13	2013/14
Human Capital and Science Platforms	1 061 963	1 119 136	1 243 722	1 405 844		1 433 561	1 695 652
Indigenous Knowledge Systems	12 122	23 525	25 259	17 132		28 437	31 241
Emerging Research Areas and Infrastructure	380 613	448 696	485 163	527 451		573 898	652 009
Total	1 454 698	1 591 357	1 754 144	1 950 427		2 035 896	2 378 902
Compensation of employees	14 964	18 112	19 369	19 743		24 647	25 596
Goods and services	6 499	7 577	10 251	6 478		6 751	7 020
Total transfer and subsidies	1 433 015	1 565 430	1 724 332	1 924 095		2 004 382	2 346 164
Total payment for capital assets	217	238	179	111		116	122
Total	1 454 698	1 591 357	1 754 144	1 950 427		2 035 896	2 378 902
							2 588 974



Programme 5



5.4 Programme 5: Socio-Economic Partnerships

Purpose: This Programme enhances the growth and development priorities of government through targeted S&T interventions and the development of strategic partnerships with other government departments, industry, research institutions and communities. Interventions include high potential R&D-led industrial development programmes, technology support programmes for industry, introducing new approaches to government service delivery and planning, strengthening science-based policy development and decision-making, demonstrating technology-led opportunities for creating sustainable jobs and wealth creation, and strengthening the contribution of technology in sustainable human settlements.

5.4.1 Strategic objectives

- To inform and influence technology choices and how alternative technologies can be used to transform rural and social economic development, government planning and service delivery, and the building of sustainable human settlements.
- To identify, grow and sustain a portfolio of niche high-potential STI capabilities for sustainable development and the greening of society and the economy.
- To enhance understanding and analysis that support improvements in the functioning and performance of the NSI.
- To identify, grow and sustain a portfolio of niche high-potential R&D capabilities that improves the competitiveness of existing and emerging economic sectors and that facilitates the development of new targeted industries with growth potential in advanced manufacturing, chemicals, advanced metals and ICTs.
- To support the generation, application and dissemination of social scientific knowledge, high-end human capital development in the social sciences and

humanities, and stronger links between knowledge and policy.

5.4.2 Subprogramme

- **Science and Technology for Economic Impact** advances strategic medium and long-term sustainable economic growth and sector development priorities as well as government service delivery through the following value-adding functions:
 - Investing in the long-term knowledge-generation capabilities of the NSI in targeted innovation areas.
 - In partnership with other government departments and economic actors, spearheading focused efforts that exploit knowledge capabilities for economic benefit. (Economic benefit includes the development of advanced industries, improved government service delivery, improving productivity and competitiveness, and technology transfer and support to small and medium enterprises as well as manufacturing firms in the supply chains of large-scale public infrastructure development programmes).
 - Providing strategic innovation policy and planning support to economic actors in priority economic sectors and provincial and local governments.
 - **Science and Technology for Social Impact** leads and supports knowledge generation in human and social dynamics in development, and promotes technology transfer for poverty reduction to support the creation of sustainable job and wealth opportunities and to contribute to creating sustainable human settlements in areas of deprivation. It focuses on mature technologies that do not yet have widespread application, but are seen as having the potential to achieve government's broad development objectives. It does this by building partnerships with other government departments focusing on research, tech-

nology demonstration and technology transfer.

- **Science and Technology Investment** leads and supports the development of indicators and instruments for measuring and monitoring investments in S&T and the performance of the NSI, and ways of strengthening

ing the NSI and innovation policy. This includes an annual R&D survey, innovation measurement, the development of S&T indicators, the development of databases and information systems such as the Research Information Management System (RIMS) and national S&T expenditure tables, and the implementation of section 11D of the Income Tax Act, 1962, to promote private sector R&D investment.

5.4.3 Annual performance information and MTEF estimates

Table 9: Programme annual performance information for 2012/13

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance							Estimated performance	Medium-term targets
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15		
Strategic objective : To inform and influence technology choices and how alternative technologies can be used to transform rural and socio-economic development, government planning and service delivery, and the building of sustainable human settlements											
New technology-based opportunities for rural and social economies introduced	Number of livelihoods created, sustained or improved	improved by 31 March 2015	1 220 livelihoods created, sustained or improved	269 sustainable livelihood opportunities created	396 sustainable livelihood opportunities created	467 sustainable livelihood opportunities created	400 livelihood opportunities created, sustained or improved by 31 March 2012	400 livelihood opportunities created, sustained or improved by 31 March 2013	400 livelihood opportunities created, sustained or improved by 31 March 2014	420 livelihood opportunities created, sustained or improved by 31 March 2015	

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance					Estimated performance	Medium-term targets			
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15			

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
Knowledge and innovation products generated	Number of patents, patent applications, technology prototypes, patent demonstrators and applications added to the IP portfolio from funded IP portfolio or co-funded research programmes	6 additions to the IP portfolio (patents, patent applications, technology prototypes, patent demonstrators and applications added to the IP portfolio from funded IP portfolio and technology demonstrators and tech-transfer packages) by 31 March 2015	-	-	-	3 technology demonstrators added to the IP portfolio	1 additions to the IP portfolio (patents, patent applications, technology prototypes, demonstrators and technology transfer packages) by 31 March 2012	2 additions to the IP portfolio (patents, patent applications, technology prototypes, demonstrators and technology transfer packages) by 31 March 2013	2 additions to the IP portfolio (patents, patent applications, technology prototypes, demonstrators and technology transfer packages) by 31 March 2014	2 additions to the IP portfolio (patents, patent applications, technology prototypes, demonstrators and technology transfer packages) by 31 March 2015
							45 scientific and technical papers accepted for publication by 31 March 2012	50 scientific and technical papers accepted for publication by 31 March 2013	55 scientific and technical papers accepted for publication by 31 March 2014	60 scientific and technical papers accepted for publication by 31 March 2015
							23 scientific and technical papers published			

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance					Estimated performance	Medium-term targets
			2008/09	2009/10	2010/11	2011/12	2012/13		

Strategic objective : To identify, grow and sustain a portfolio of niche high-potential R&D capabilities that improves the competitiveness of existing and emerging economic sectors and that facilitates the development of new targeted industries with growth potential in advanced manufacturing, chemicals, advanced metals and ICTs.

Human capital for competitive- ness and new industry devel- opment built	Number of high-level research graduates (master's and PhD students) funded or co- funded in designated niche areas	250 master's and PhD re- search gradu- ates supported in designated niche areas by 31 March 2015	41 patents, proto- types, technol- ogy demonstra- tors or technol- ogy transfer packages added to the IP portfolio through funded or co-funded research initiatives	Innovation prod- ucts generated
6 master's	supported in students and PhD designated niche areas	2	7	
24 master's	supported in students and PhD designated niche areas	7	7 patents and 5 technology demonstrators added to the IP portfolio	
99 master's	supported in des- ported in des- ignated niche areas	13 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2012	13 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2013	
136 master's	supported in des- ported in des- ignated niche areas by 31 March 2012	13 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2014	14 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2015	
140 master's and PhD stu-	supported in des- ported in des- ignated niche areas by 31 March 2014	14 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2014	14 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2015	
138 master's and PhD	supported in des- ported in des- ignated niche areas by 31 March 2013	13 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2013	13 patents, proto- types, tech- nology demon- strators or tech- nology transfer packages added to the IP portfolio by 31 March 2014	

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets	
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Local firms enabled for local procurement opportunities	Number of companies provided with a technology assistance package (TAP)	100 companies on the register of supported companies by 31 March 2015	-	24 companies provided with TAPs	26 companies provided with TAPs	24 companies on a register of companies provided with a TAP by 31 March 2012	50 companies on a register of companies provided with a TAP by 31 March 2013	72 companies on a register of companies provided with a TAP by 31 March 2014	100 companies on a register of companies provided with a TAP by 31 March 2015
Competitiveness of small and medium enterprises improved	Number of small and medium enterprises provided with technology support	6 548 small and medium enterprises receiving technology support by 31 March 2015	-	1 594 small and medium enterprises supported	1 791 small and medium enterprises supported	1 753 small and medium enterprises receiving technology support by 31 March 2012	1 928 small and medium enterprises receiving technology support by 31 March 2013	2 120 small and medium enterprises receiving technology support by 31 March 2014	2 500 small and medium enterprises receiving technology support by 31 March 2015

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance			Estimated performance	Medium-term targets	
			2008/09	2009/10	2010/11			

Strategic Objective : To support the generation, application and dissemination of social scientific knowledge; high-end human capital development in the social sciences and humanities; and stronger links between knowledge and policy

High-level human capital development	Number of honours/master's/PhD students funded or co-funded in the social sciences and humanities	90 honours/master's/PhD students funded or co-funded in the social sciences and humanities by 31 March 2015	-	-	-	34 funded honours/master's/PhD students in the social sciences and humanities	21 honours/master's/PhD students funded or co-funded in the social sciences and humanities by 31 March 2012	35 honours/master's/PhD students funded or co-funded in the social sciences and humanities by 31 March 2013	50 funded honours/master's/PhD students funded or co-funded in the social sciences and humanities by 31 March 2014	50 funded or co-funded internships in the social sciences and humanities
Number of internships in the social sciences and humanities	150 funded or co-funded internships in the social sciences and humanities by 31 March 2015	-	-	-	-	50 funded or co-funded internships in the social sciences and humanities	50 funded or co-funded internships in the social sciences and humanities by 31 March 2012	50 funded or co-funded internships in the social sciences and humanities by 31 March 2013	50 funded or co-funded internships in the social sciences and humanities by 31 March 2014	50 funded or co-funded internships in the social sciences and humanities by 31 March 2015

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets	
			2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Peer-reviewed scientific publications	Number of peer-reviewed scientific papers published	37 peer-reviewed scientific publications by March 2015	-	-	-	-	7 peer-reviewed scientific publications by 31 March 2013	15 peer-reviewed scientific publications by 31 March 2014	15 peer-reviewed scientific publications by 31 March 2015
Strengthened research-policy nexus	Number of policy interventions (seminars, briefs, policy papers)	27 policy interventions by March 2015	-	-	-	9 policy interventions (seminars, briefs, policy papers) by 31 March 2011	9 policy interventions (seminars, briefs, policy papers) by 31 March 2012	9 policy interventions (seminars, briefs, policy papers) by 31 March 2013	9 policy interventions (seminars, briefs, policy papers) by 31 March 2014

Table 10: Expenditure Estimates

Socio-Economic Partnerships detail by subprogramme							
R thousand	Actual outcome			adjusted ap- ropriation	Medium-term estimates		
	2008/09	2009/10	2010/11		2011/12	2012/13	2013/14
Science and Technology for Eco- nomic Impact	847 157	899 209	888 272	945 676	1 022 114	1 100 654	1 157 958
Science and Technology for Social Impact	247 595	264 910	254 274	296 798	372 534	390 010	412 885
Science and Technology Investment	23 695	10 435	32 196	26 597	25 137	26 002	29 621
Total	1 118 447	1 174 554	1 174 742	1 269 071	1 419 785	1 516 666	1 600 464
Compensation of employees	21 974	21 688	24 696	32 293	33 961	35 676	37 817
Goods and services	5 840	11 180	9 509	9 424	13 344	14 336	15 088
Total transfer and subsidies	1 090 391	1 141 296	1 140 191	1 226 913	1 372 017	1 466 166	1 547 042
Total payment for capital assets	242	387	316	441	463	488	517
Total	1 118 447	1 174 554	1 174 742	1 269 071	1 419 785	1 516 666	1 600 464

6. Links to other plans

6.1 Links to the long-term infrastructure and capital plans

The R&D infrastructure supported by Department is mainly located within the universities, science councils, National Research Foundation (NRF) national facilities and research-performing museums. This infrastructure is in the form of scientific equipment, specialised facilities and high-end infrastructure.

Table 11: Links to the long-term infrastructure and capital plans

Project name	Programme	Municipality	Project description/ type of structure	Outputs	Estimated project cost R	Expenditure to data (if any) R	Project duration	Start	Finish
New and replacement assets									
Indigenous Knowledge (IK) National Recordal System (6 nodes by 2015)	Programme 4	Across all nine provinces		Data storage and management system	Protected, pre-served and catalogued IK data	A distributed national IK Management System		2008	2015

Project name	Programme	Municipality	Project description/ type of structure	Outputs	Estimated project cost R	Expenditure to date (if any) R	Project duration	
							Start	Finish
Biocomposites materials testing and characterisation R&D infrastructure	Programme 5	Nelson Mandela Bay Metropolitan Municipality	The establishment of a Biocomposites CoC to support the entire national biocomposites value chain in terms of research, technology development, manufacturing support, prototype production and technology demonstration	2 500 jobs in fabrication and manufacturing by 2020 20 master's and 8 doctoral graduates, and 5 postdoctoral researchers by 2015. R2 billion per annum downstream (final products) by 2020	34 800 000	6 976 800 (NATFIBIO via TIA)	2012/13	2014/15
Calcium carbonate pilot plant	Programme 5	Tshwane	Extension of the Fluorochemical Expansion Initiative	Pilot plant capable of producing high quality calcium carbonate using the ammonia process	2 500 000	None	2012/13	2014/15

Project name	Programme	Municipality	Project description/ type of structure	Outputs	Estimated project cost R	Expenditure to date (if any) R	Project duration	
							Start	Finish
Platinum group metal chemicals demonstrator	Programme 5		Extension of Precious Metals Development Network of the Advanced Metals Initiative	Bench-scale pilot plant for stage gate to scale up.	40 000 000	17 500 000	2013/14	2015/16
MeerKAT	Programme 2	Kareeberg and Karoo Hoogland Municipalities	Radio telescope and other related infrastructure		1 052 960 911	216 939 328	2007/08	2015/16
HySA Infra-structure	Programme 2	Northwest university			32 200 000	2 300 000	2009/10	2014/15
HySA Catalysis	Programme 2	Universities of Cape Town, Kwazulu-natal and western cape			57 190 000	3 390 000	2009/10	2014/15
HySA Systems	Programme 2	Universities of Cape Town, Kwazulu-natal and western cape			53 750 100	21 520 100	2009/10	2014/15

Project name	Programme	Municipality	Project description/ type of structure	Outputs	Estimated project cost R	Expen- diture to date (if any) R	Project duration				
Total of new and replacement as- sets								1 318 401 911	292 626 228		
Maintenance and repairs											
Centre for High-resolution Transmission Electron Microscopy (HRTM) at Nelson Man- dela Metropolitan University (NMMU)	Programme 4	NMMU	National facility to support re- search capacity development in nanotechnology and nanosci- ence	National Facility Researchers and students trained in HRTM knowledge outputs (publications, pat- ents, prototypes, etc.)	15 000 000	0	2012/13	2014/15			

Project name	Programme	Municipality	Project description/ type of structure	Outputs	Estimated project cost R	Expenditure to date (if any) R	Start	Finish
Total maintenance and repairs								
					15 000 000	69 000 000		
Rehabilitation, renovations and refurbishments								
HysA Infra-structure	Programme 2	NWU	Extended laboratory fitment		5 000 000	1 500 000	2011/12	2013/14
HysA Infra-structure	CSIR		Extended laboratory fitment		5 000 000	0	2011/12	2013/14
HysA Infra-structure	Programme 2	UCT	Extended laboratory fitment		5 000 000	0	2011/12	2013/14
MeerKAT	Programme 2	Kareeberg Municipality and Karoo Hoogland Municipality	Radio telescope		8 575 308	0		
Total rehabilitation, renovations and refurbishments					23 575 308	1 500 000		

7. Public-private partnerships

Table 12: DST public-private partnerships

Name of PPP	Purpose	Outputs	Current value of agreement	Date when agreement expires
Themba Particle Therapy Centre (Registration No. N097)	To establish a comprehensive national particle therapy centre for education and training, R&D and cancer treatment. In particular, providing a new cancer treatment modality for patients that cannot be treated with conventional methods	Human capital development in specialised areas of radio-therapy Patients treated for inoperable and aggressive cancers	R200 000	
DST-SAP collaboration	The DST-SAP partnership promotes South Africa's participation in global competitive research programmes and attracts more foreign direct investment in ICT R&D.	The collaboration focuses on expanding the existing human capacity development programme through, inter alia, collaboration with other leading institutions. Another aim of the collaboration is to develop market-relevant software products and commercialise research outputs in the country in collaboration with small, medium and micro enterprises.	R25 million	2015/16

8. Public entities

Table 13: DST public entities

Name of public entity	Mandate	Current annual budget (2012/2013) R '000	Date of next evaluation
Human Sciences Research Council (HSRC)	<ul style="list-style-type: none"> • To initiate, undertake and foster strategic basic research and applied research in human sciences, and to gather, analyse and publish data relevant to developmental challenges in South Africa, elsewhere in Africa and in the rest of the world, especially by means of projects linked to public-sector-oriented collaborative programmes. • To inform the effective formulation and monitoring of policy and evaluate the implementation of policy. • To stimulate public debate through the effective dissemination of fact-based research results. • To help build research capacity and infrastructure for the human sciences in South Africa and elsewhere in Africa. • To foster and support research collaboration, networks and institutional linkages within the human sciences research community. • To respond to the needs of vulnerable and marginalised groups in society by researching and analysing developmental problems, thereby contributing to the improvement of the quality of their lives. • To develop and make publicly available new datasets to underpin research, policy development and public discussions of the key issues of development, and develop new and improved methodologies for use in their development. 	386 509	2015

Name of public entity	Mandate	Current annual budget (2012/2013) R '000	Date of next evaluation
National Research Foundation (NRF)	<ul style="list-style-type: none"> To support and promote research through funding, human resource development and the provision of the necessary research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of S&T, including indigenous knowledge, and thereby to contribute to the improvement of the quality of lives of all the people of South Africa. 	2 254 215	2015
Technology Innovation Agency (TIA)	<ul style="list-style-type: none"> To support the state in stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploring technological innovation 	450 644	
Africa Institute of South Africa (AISA)	<ul style="list-style-type: none"> To promote knowledge and understanding of African affairs through leading social scientists acting in concert and across all disciplines, and through training and education on African affairs. To collect, process and disseminate information on African affairs, give effective advice and facilitate appropriate action in relation to the collective needs, opportunities and challenges of all South Africans. To promote awareness and consciousness of Africa at grass-roots level. 	37 829	2015

Date of next evaluation	Current annual budget (2012/2013) R '000	Mandate	Name of public entity
	17 193	<ul style="list-style-type: none"> • To promote common ground in scientific thinking across all disciplines, including the physical, mathematical and life sciences, as well as human, social and economic sciences. • To encourage and promote innovative and independent scientific thinking. • To promote the optimum development of the intellectual capacity of all people. • To provide effective advice and facilitate appropriate action in relation to the collective needs, opportunities and challenges of all South Africans. • To link South Africa with scientific communities of the highest levels, in particular within the Southern African Development Community, the rest of 30 Africa and internationally. 	Academy of Science of South Africa (ASSAf)
New entity	143 700	<ul style="list-style-type: none"> • To promote the peaceful use of space. • To support the creation of an environment conducive to industrial development in space technology. • To foster research in space science, communications, navigation and space physics. • Advance scientific, engineering and technological competence and capabilities through human capital development outreach programmes and infrastructure development. • To foster international co-operation in space-related activities. 	South African National Space Agency

Name of public entity	Mandate	Current annual budget (2012/2013) R '000	Date of next evaluation
Council for Scientific and Industrial Research (CSIR)	<ul style="list-style-type: none"> To foster, in the national interest and in the fields which in its opinion should receive preference, industrial and scientific development, either by itself or in cooperation with principals from the public or private sector, and thereby to contribute to the improvement of the quality of life of the people of South Africa, and to perform any other functions that may be assigned to it by or under the Scientific Research Council Act 	1 980 923	2014

The image features a light blue background with a subtle grid pattern. A prominent, wavy, abstract shape in a slightly darker shade of blue is centered horizontally, creating a sense of depth and movement. The shape appears to be composed of many thin, overlapping lines or a liquid-like surface. The overall aesthetic is clean, modern, and minimalist.

The image features a light blue background with a subtle grid pattern. A prominent, wavy, abstract shape in a slightly darker shade of blue runs vertically through the center, creating a sense of movement and depth. The overall aesthetic is clean and modern.

The image features a light blue background with a fine, white grid pattern. A prominent, wavy, abstract shape in a slightly darker shade of blue runs vertically through the center, creating a sense of movement and depth. The overall aesthetic is clean and modern, typical of a professional presentation or report cover.

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