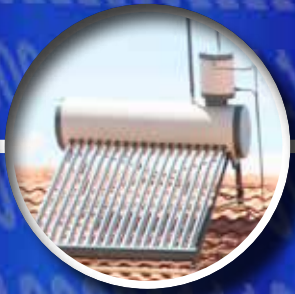


annual performance plan 2013/14



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 Hanekom. The Annual Performance Plan was prepared within the framework of the Department's current strategic plan (2011-2016). 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 Annual Performance Plan outlines steps that the Department of Science and Technology (DST) will undertake to reach its strategic goals. The plan provides performance indicators and targets for the financial year 2013/14, with the Department continuing to invest in its key mandate of research, development and innovation.

Our spending will focus on human capital development, knowledge generation and exploitation, research and development infrastructure, and on the advancement of international cooperation in science, technology and innovation in Africa and the rest of the world.

Over the medium term, expenditure is expected to increase to R7,6 billion, mainly due to the substantial allocation for the Square Kilometre Array, amounting to R1,97 billion over a period of three years, R400 million in 2015/16 for postgraduate bursaries, R605 million for the modernisation of national research infrastructure and R125,1 million for improvements in conditions of service for the DST and its entities. Further, allocations have been made for the economic competitiveness and support package for research, technology and development, and the internship programme.

As work continues on the design of the SKA, the MeerKAT, which is the SKA precursor array is taking shape in the Karoo and will be the largest and most sensitive radio telescope in the southern hemisphere until the SKA is completed around 2024.

On the health front, a significant breakthrough was made by CAPRISA in the quest to find a solution to HIV and AIDS in the country. The study was funded by the DST, the Bill and Melinda Gates Foundation and USAID through a consortium of local and international researchers. The study discovered how certain people develop very powerful HIV antibodies. These antibodies are referred to as broadly neutralising antibodies because they kill a wide range of HIV types from different parts of the world. This groundbreaking discovery provided important clues that could be useful in the quest to develop an AIDS vaccine.

In line with the National Development Plan, a more regional and continental focus on strengthening the science, technology and innovation (STI) system will be adopted to maximise national interest. Our efforts in this regard will focus on leveraging funding and other resources to support research and innovation systems in South Africa and on the continent.

International cooperation was strengthened by the establishment of the BRICS Senior S&T Official Meetings (SOM) to ensure the deepening of STI partnerships with Brazil, Russia, India and China. Preparations are underway for the first BRICS S&T Ministerial Meeting.

The modernisation of research infrastructure and human capital development will also require major expenditure, both to support researchers and students pursuing postgraduate studies at honours, master's, doctorate and postdoctoral level, and to ensure that these scientists have the infrastructure and equipment they need to pursue their research.

The National Development Plan (NDP) Vision 2030 identifies education, training and innovation as being at the centre of South Africa's long-term development, and the NDP specifically states that "inadequate capacity will constrain knowledge production and innovation unless effectively addressed". In respect of human capital development, the Department will continue its support for postgraduate bursaries, postdoctoral fellowships, research grants for emerging researchers and researchers who are completing PhD qualifications, and funding for six new centres of excellence (CoEs) – initiatives that were ramped up through

new funds obtained in the 2011/12 MTEF. The postgraduate bursaries, postdoctoral fellowships and researcher support are set to benefit immensely from the R400 million new money allocated towards the end of the current MTEF – that is, for the 2015/16 financial year.

The South African Research Chairs Initiative (SARChI) is proving to be an effective instrument in human capital development and knowledge creation in our universities and in our science system in general. In 2012/13, this initiative received support of R405 million from the Department, with additional funding provided for 62 new research chairs, bringing the total number of research chairs in the system to 152. By the end of the current MTEF, the investment in SARChI would grow to about R450 million per annum, with all 152 research chairs fully operational.

A key feature of all the initiatives and interventions supported by the DST is the government's fundamental emphasis on the need to move from over-reliance on a resource-based economy to a knowledge-based economy. This is reflected in priorities such as minerals beneficiation, green economy, building the manufacturing sector (including pharmaceutical manufacturing) and strengthening the ICT sector.

During the course of 2012/3, recommendations arising from the Ministerial Review Committee regarding the National System of Innovation will be taken forward. The effective, coordinated functioning of the Department is premised on the focused and efficient functioning of all the science councils, all Public Entities, centres of excellence, research chairs, National Facilities, science centres, etc. Particular attention will be given to the recommendations of the Review Committee that relate to the improvement of coordination and coherence in the National System of Innovation, and to improved coordination of the research and development undertaken in the public and the private sectors.

The NDP highlights the spatial dimension of underdevelopment and the need for building capability to address this. New approaches and models with regard to service delivery are considered as key areas of opportunity. These include technology-based opportunities for tackling priorities in rural development, education and health, as well as technologies that support planning and delivery within government.

The DST has accordingly introduced pilot projects to determine the technical, environmental and financial feasibility of technology solutions in the cultivation of medicinal plants, fish, essential oils and new plant cultivars.

Recognising that a lack of safe drinking water has a profound impact on the health of poor and vulnerable communities, the DST launched a pilot programme in Mbelu in the rural Eastern Cape last year to provide clean drinking water in six villages. The project saw the installation of solar-powered water purification units, with ceramic water filters being provided to households.

The Cofimvaba Schools District Project in the Eastern Cape is looking at ways in which a range of technologies can be employed to address education problems in a rural setting. This project is targeting 26 schools in the Nciba circuit in the Cofimvaba district, and will see learners and teachers, with the participation of communities, connected to the Internet, a science centre being established, as well as health, nutrition, sanitation and electricity interventions.

The Annual Performance Plan provides information through which Parliament and the public can measure the performance of the DST.



MR DA HANEKOM, MP
MINISTER OF SCIENCE AND TECHNOLOGY



PART A

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

The Department of Science and Technology (DST) followed its planning cycle framework in managing the process of developing its 2013/14 annual performance plan (APP). Specifically, the process entailed series of steps starting with the Executive Committee (EXCO) considering the approach and steps that would be undertaken in developing the APP. Once EXCO approved the approach and steps, the international and national trends were identified and review of previous performance was done including the consideration of the 2012/13 second and third quarterly reports. The Departmental Programmes were then requested to think and contribute their inputs at the Extended EXCO twice. Comments were consolidated and a draft APP was tabled at EXCO for consideration and recommendation to the Minister. EXCO's comments were considered and a revised APP was then submitted to the Minister for approval.

3.1 Performance delivery environment

The Department of Science and Technology (DST) derives its mandate from the 1996 White Paper on Science and Technology, which introduced the concept of the National System of Innovation (NSI). The NSI concept is an enabling framework for development of science, technology and innovation (STI) at national level. The NSI 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.

The DST, as the custodial coordinator for the development of the 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, technology and innovation (STI) play a driving role in enhancing productivity, economic growth and socio-economic development.

In particular, innovation will be the basis of future growth and can provide South Africa with the necessary foundation for long-term and sustainable socio-economic development. In fact, one of the eight proposals that the National Development Plan (NDP) has made with regard to increasing employment and growth is that South Africa must increase the size and effectiveness of the innovation system, and ensure closer alignment with companies that operate in sectors consistent with the growth strategy.

Innovation has been attributed to productivity growth, competitiveness, the shift to higher value-added activities, and improvement of quality of life in the recently industrialised countries (such as South Korea and Finland) and emerging economic powers



(China, India and Brazil). Innovation introduces new ways of doing things, and producing and exchanging goods or improving services and processes. It provides new solutions and helps firms to differentiate themselves from other, often more traditional firms. Innovation challenges long-held mindsets and social values. Innovation is central to economic performance and social welfare. It is more than high technology, it includes lower technology, service industries and social innovation, all of which are needed at all levels of development. Innovation can contribute to addressing urgent global and social challenges such as climate change, health, food security, poverty and access to clean water) in an affordable and timely manner.

The global economic crisis and national challenges of inequality, poverty and unemployment have affected the national innovation policy agenda in various ways. There is increasing demand for STI to maximise its impact on socioeconomic development and conserving resources. The national STI policies are expected to be relevant (to address socioeconomic goals), coherent (with each other and with other policies), and inclusive (in terms of scope and of the concerned actors).

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 scientific infrastructure, basic science and research, development and innovation, strengthen human capital, promote green technology, and foster entrepreneurship. Stimulus packages have also provided additional support to science and innovation 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 0,87% 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.
- Providing and maintaining state of the art STI infrastructure.
- Creating a coordinated and integrated NSI governance and robust monitoring and evaluation (M&E).
- Developing and strengthening of regional and provincial innovation systems and capabilities to meet community and industry demands.

- Using the cluster system to facilitate alignment of the DST programmes to the New Growth Path and IPAP2 and National Development Plan (NDP).
- Resourcing of the system by achieving and going beyond the 1% (General Expenditure on Research and Development (GERD) as a % of GDP.
- Strengthening Government-industry-higher education partnerships.

The DST Strategic Plan and this 2013/14 Annual Performance Plan 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.

Progress in Implementing the Department's Strategic Plan

The DST Strategic Plan identifies human capital development, global and Africa collaboration, knowledge generation (research and development), knowledge exploitation (innovation) and infrastructure as priority focus areas. Significant progress has been made since the Strategic Plan was submitted and approved. The following section provides progress on the strategic objectives set out in the Strategic Plan.

Human Capital Development and Knowledge Generation

The DST (together with its public entities [those receiving funding from DST) have increased its support for postgraduate students through its bursary programme. The total number of postgraduate students supported through the NRF increased from 5 131 in 2009/10 to 7 083 in 2011/12. This increase has been coupled with significant increases in bursary values for all levels of postgraduate studies. Support for researchers also increased, with 2 886 researchers receiving research grants in 2011/12, as compared to 2 422 in 2009/10.

The Department finalised its Human Capital Development strategy, guiding investment in student training and research, as well as initiatives to support emerging researchers, especially in order to further enhance the demographic transformation of the postgraduate sector.

As part of increasing knowledge production publications from researchers awarded research grants through NRF managed programmes increased from 2 753 in 2009/10 to 4 777 in 2011/12.

More than twenty new research chairs have been selected under the South African Research Chairs Initiative. A new Centre of Excellence in Palaeosciences is being established by the Department following Cabinet approval of the national palaeosciences strategy.

Innovation or knowledge exploitation

The DST (together with its public entities) re-oriented some of the interventions (such as advanced manufacturing technology) to align to government policy instruments such as the Industrial Policy Action Plan (IPAP 1 and IPAP 2). In order to enhance the conversion of knowledge into products and processes, several instruments have been introduced. These include the establishment of TIA, Centres of Competence (CoCs), offices of technology transfer and the National Intellectual Property Management Office (NIPMO), as well as the development of the technology localisation plan. These institutional arrangements, in our view, complete the process of setting up institutions to bridge the innovation chasm.

South Africa has the largest fluor spar reserves in the world and is a significant supplier to hydrogen fluoride producers. The Fluoro-chemical Expansion Initiative (FEI) initiative supports government's chemicals sector development strategy to counter the trade deficit in chemical products, and also supports the Industrial Policy Action Plan (IPAP). This FEI initiative is aimed at



developing expertise to beneficiate flourospar into a range of fluorine-based products. In order to drive the initiative to the next stage, in June 2012, the Multipurpose Fluorination Pilot Plant was established.

In addition to the existing COCs, the Department (together with the Council for Scientific and Industrial Research [CSIR]) co-invested in the establishment of a biocomposite Centre of Competence during the 2011/12 financial year. This COC serves as catalyst to unlock the bio-composite industry with the potential size of a fully developed industry in South Africa estimated at R350 million.

The Department achieved 632 jobs opportunities which were created, sustained or improved by end of 2011/12 as compared to 396 in 2009/10.

1 918 small and medium enterprises received technology support through the Technology Stations Programme in 2011/12 as compared to 1 594 in 2009/10.

Infrastructure

In May 2012 South Africa with its 8 partner countries (Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia) won the bid to host 70% of the SKA radio telescope.

The Department expanded broadband connectivity through the South African National Research Network (SANReN) to all the major campuses of tertiary educational institutions, with the result that 139 research and educational sites (as compared to 32 in 2009/10) are now networked, serviced at speeds of up to 10 gigabits per second.

The Department completed the development of the National Recordal System, a unique computerised system allowing systematic capture of valuable indigenous knowledge as a first step in its further development.

3.2 Organisational environment

Three agencies (the National Research Foundation, the Technology Innovation Agency and the South African National Space Agency), three science councils (the Council for Scientific and Industrial Research, the Human Sciences Research Council, and the Africa Institute of South Africa), the National Advisory Council on Innovation, the Academy of Science of South Africa and the South African Council for Natural Scientific Professions are accountable to the Ministry of Science and Technology through the Department.

In addition to the agencies and research councils that report to the DST, there are several other science councils under other line departments, such as the Agricultural Research Council, the Medical Research Council, and the Water Research Commission. In principle, the coordination function for the DST with respect to these councils is outlined in the 'New Strategic Management Model' for South Africa's science and technology system (2004), and in practice there exist several operational links to these councils. This Strategic Management Model was intended to clarify the respective functions of the Department and the relevant line departments; in this context the model was conceptualized as a driver or framework for coordinating the National System of Innovation.

The Department has memoranda of agreement with the Departments of Trade and Industry, Minerals and Energy (since divided), Defence, Transport, Agriculture, Water Affairs and Forestry (since divided), Environmental Affairs, and Housing. In each case, provision has been made for joint coordination committees drawn from the participating departments. These structural initiatives were meant to effect the model, but as part of improving governance of the National System of Innovation.

The Department enjoys strategic partnerships with a number of local and international institutions and organisations, as well as businesses and corporations, such as Eskom, Anglo American, Transnet, Sasol, UNESCO, the European Centre for Nuclear

Research in Geneva, the International Centre for Genetic Engineering and Biotechnology in Trieste, the Group on Earth Observation in Geneva and many others.

Internally, the Department comprises 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.

The Department commits itself to continuous improvement in the policies, processes, structures and instruments that have been put in place in pursuit of an effective NSI whose contribution to national development is being optimised. It will implement some of the recommendations (especially those related to governance, funding and monitoring and evaluation) emanating from the 2012 Ministerial Review Committee Report.

The DST and its public entities will continue to deepen the implementation and monitoring of the initiatives and programmes in the Strategic Plan, including HCD initiatives such as research chairs and the roll-out of new centres of excellence (as part of knowledge generation), as well as the centres of competence, the National Intellectual Property Management Office (NIPMO) and the Technology Innovation Agency (TIA) (as part of the knowledge exploitation). The development of local manufacturing capability through the Ketlaphela project will lead to the production of antiretroviral drugs. The Bioeconomy Strategy will be finalised and implemented, and global and African collaboration will be strengthened.



3.3 Linking Programme objectives 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
<p>To develop the innovation capacity of the NSI and thereby contribute to socio-economic development</p>	<ul style="list-style-type: none"> • To support ongoing research and development and demonstration of technology based solutions with the intention of promoting the commercialisation and use thereof. • To provide system-based leadership across the NSI, including regulatory and compliance functions, and support that seek to optimise the commercialisation and use of technology based solutions. • To secure foreign STI funds that will stimulate knowledge production, technology transfer, enhanced innovation, and STI human capital development in pursuit of STI based socio-economic development in South Africa • To identify, grow and sustain niche high-potential STI capabilities for sustainable development and the greening of society and the economy. • To identify, grow and sustain 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 aerospace, advanced manufacturing, chemicals, advanced metals, mining and ICTs. • Through knowledge, evidence, and learning, to inform and influence how science and technology can be used to transform rural and socio-economic development, government planning and service delivery, and the building of sustainable human settlements. • To promote public engagement on science, technology and innovation • To enhance understanding and analysis that support improvements in the functioning and performance of the National System of Innovation (NSI).
<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>	<ul style="list-style-type: none"> • To contribute to the development of representative high level human capital able to pursue locally relevant, globally competitive research and innovation activities. • To support and promote research that develops basic sciences through production of new knowledge and relevant training opportunities. • To identify, grow and sustain 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 aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs. • To identify, grow and sustain niche high-potential STI capabilities for sustainable development and the greening of society and the economy. • To strategically develop priority science areas in which South Africa enjoys a competitive advantage, by promoting internationally competitive research and training activities and outputs.

DST STRATEGIC OUTCOME-ORIENTED GOALS**PROGRAMME OBJECTIVES**

To develop appropriate STI human capital to meet the needs of society

- To contribute to the development of representative, high level human capital able to pursue locally relevant, globally competitive research and innovation activities.
- To identify, grow and sustain 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 aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs.
- To identify, grow and sustain niche high-potential STI capabilities for sustainable development and the greening of society and the economy.
- To promote public engagement on science, technology and innovation.

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

- To ensure availability of and access to internationally comparable research and innovation infrastructure in order to generate new knowledge and train new researchers
- To identify, grow and sustain niche high-potential STI capabilities for sustainable development and the greening of society and the economy.

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

- To increase the number of South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development in support of the NSI.
- To secure foreign STI funds that will stimulate knowledge production, technology transfer, enhanced innovation, and STI human capital development in pursuit of STI based socio-economic development in South 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 ensure availability of and access to internationally comparable research and innovation infrastructure in order to generate new knowledge and train new researchers.
- To secure South African and foreign funds for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa.



4. OVERVIEW OF THE 2013/14 BUDGET AND MTEF ESTIMATES

Table 2: Department of Science and Technology expenditure estimates

R thousand	Actual outcome				2012/13 Original appropriation	Adjusted estimate	Medium-term estimates Estimated baseline		
	2009/10	2010/11	2011/12	2012/13			2013/14	2014/15	2015/16
Programmes									
Administration	159 122	188 858	195 556	202 651	229 429	268 158	290 960	309 183	
Research Development and Innovation	1 141 350	802 774	854 944	1 156 372	1 142 807	1 627 145	1 603 851	1 702 027	
International Cooperation and Resources	1 17 474	131 384	132 276	141 226	139 317	148 430	157 186	164 362	
Human Capital and Knowledge Systems	1 591 357	1 754 144	1 956 334	2 035 896	2 064 673	2 476 821	2 683 537	3 417 836	
Socio-Economic Partnerships	1 174 554	1 174 742	1 264 362	1 419 785	1 423 384	1 677 601	1 864 656	2 050 912	
Total	4 183 857	4 051 902	4 403 472	4 955 930	4 999 610	6 198 155	6 600 190	7 644 320	
Compensation of employees	167 488	190 629	207 164	242 302	247 588	260 733	283 818	300 966	
Goods and services	116 757	140 736	138 283	151 191	161 727	193 341	203 425	208 994	
Transfers and subsidies	3 891 873	3 709 582	4 050 426	4 559 018	4 587 720	5 741 903	6 110 638	7 131 945	
Payments for capital assets	7 659	10 603	6 946	3 419	2 575	2 178	2 309	2 415	
Payments for financial assets	80	19	183	-	-	-	-	-	
Total	4 183 857	4 051 902	4 403 472	4 955 930	4 999 610	6 198 155	6 600 190	7 644 320	





PART B

PROGRAMME PERFORMANCE PLANS

PROGRAMME I: ADMINISTRATION

Strategic overview

The Programme has identified several strategic issues that require attention in the next three years. First, it will focus on ensuring operational efficiency across the Department. Operational efficiency will be achieved by streamlining processes, improving workflow, adding value through more audits, simplifying administration, improving synergies, minimising operational costs, increasing productivity, and continuously improving outputs. Second, the Programme will seek to coordinate and improve the alignment of planning between the DST and its public entities. The Programme will also coordinate and align the work of the DST within the government-wide strategic focus areas and priorities (including the Medium Term Strategic Framework [MTSF]).

Third, the Programme will finalise and implement the governance framework in order to improve the management of relations between DST and its public entities, reduce reporting fragmentation, and promote good corporate governance in the DST and its public entities. Fourth, the programme will implement a three-year evaluation plan and ensure better performance information for steering the NSI. Fifth, it will seek to improve compliance with audit requirements.

Sixth, the Programme will work to ensure that the Department complies with section 38(1)(a) of the Public Finance Management Act. This requires the DST to maintain an effective, efficient and transparent system of financial and risk management and internal controls. Seventh, the Programme will seek to elevate risk management to a strategic level in the Department to ensure that it can leverage the benefits of risk management by optimising opportunities identified and minimising losses and risks.

Eighth, the programme will implement an integrated approach to retain staff talent. This will be based on key Human Resource-led programmes, i.e. talent management and organisational development, employment equity, performance management and the management of wellness in the workplace (including occupational health and safety). Finally, the Programme will seek to improve knowledge management in order to preserve institutional memory and translate tacit knowledge (residing in people) into explicit or coded knowledge.

Purpose: To conduct the overall management and administration of the Department. To ensure that organisations funded by the Department comply with good corporate governance standards and that their activities are aligned with the strategic focus of the NSI. Monitor and evaluate the performance of the science councils.

The Programme is also geared towards supporting the high-level policy prioritisation of the Department through the following:

- Coordinating the development of strategic plans, annual performance plans and operational plans for the Department.
- Supporting the Department in ensuring good corporate governance in public entities by facilitating public entity board appointments and maintenance.
- Coordinating departmental engagements with the public entities through the Chairpersons', Chief Executive Officers' and Chief Financial Officer's Forums.
- Developing and implementing a monitoring and evaluation framework to assess the performance of the Department and its public entities.



- Coordinating in-year reporting and annual performance reviews for the Department and its public entities.
- Developing and implementing frameworks for institutional reviews of public entities.
- Ensuring effective communication between the Department and its key stakeholders, and creating awareness of the Department's key objectives and activities.
- Promoting the effective, efficient and economic use of financial resources in line with financial prescripts through the development and effective implementation of financial systems, policies, frameworks and procedures.
- Coordinating the implementation of effective and efficient business systems that meet users' needs, the provision of a reliable IT infrastructure and environment, and creating capacity for proper information management and business intelligence.

Strategic objectives

- To coordinate (the identification, formulation and implementation of strategic initiatives) and ensure that the priorities of the DST and its public entities are aligned to national priorities.
- To facilitate the development of a competent, productive and representative workforce within the Department.
- To enable and capacitate the Department through resource allocation and strategic support to achieve its mandate
- To partner proactively with other Programmes to optimise organisational performance and improve levels of compliance with relevant policies, frameworks and legislative requirements.
- To proactively position the Department positively both internally and externally to ensure informed employees and citizenry.

Subprogrammes

This Programme has the following components:

- a. Ministry and Office of the Director-General.
- b. Finance.
- c. Policy, Planning, Governance, Monitoring and Evaluation.
- d. Science Communication.
- e. Human Resources.
- f. Legal Services.
- g. Information Technology Systems and Support.
- h. Knowledge, Information and Records Management.
- i. Internal Audit Activity.

Annual performance information and MTEF estimates

Table 3: Programme 1 annual performance information for the 2013/14 financial year

Outputs	Performance indicator(s)	Strategic target	Audited/Actual Performance			Estimated performance	Medium-term targets			
			2009/10	2010/11	2011/12		2013/14	2014/15	2015/16	
Strategic objective: To coordinate (the identification, formulation and implementation of strategic initiatives) and ensure that the DST and its public entities priorities are aligned to the national priorities										
DST planning documents (strategic plan, annual performance plan, Estimates of National Expenditure (ENE)	Percentage alignment of DST planning documents (strategic plan and APP submitted to Parliament)	100% Aligned DST planning documents (strategic plan, annual performance plan) submitted to Parliament by 31 March 2016	DST planning documents not aligned	DST planning documents not aligned	DST planning documents not aligned	Aligned DST planning documents (strategic plan, annual performance plan, and ENE) tabled in Parliament by 31 March 2013	80% Aligned 2014/15 DST planning documents (strategic plan, annual performance plan) submitted to Parliament by 31 March 2014	90% Aligned 2015/16 DST planning documents (strategic plan, annual performance plan) submitted to Parliament by 31 March 2015	100% Aligned 2016/17 DST planning documents (strategic plan, annual performance plan) submitted to Parliament by 31 March 2016	
		100% aligned DST ENE and APP by 31 March 2016					90% aligned 2014 DST ENE and 2014/15 APP by 31 March 2014	90% aligned 2015 DST ENE and 2015/16 APP by 31 March 2015	100% aligned 2016 DST ENE and 2016/17 APP by 31 March 2016	



Outputs	Performance indicator(s)	Strategic target	Audited/Actual Performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
DST public entities strategic and annual performance plans and shareholder compacts	Approved ¹ DST public entities' strategic and annual performance plans and signed shareholders' compacts	Approved DST public entities strategic and annual performance plans and signed shareholder compact by 31 March 2016	Approved business plans by the Minister (CSIR, ASSAF, AISA, NRF and HSRC) Strategic plans tabled in Parliament: CSIR, AISA, NRF, HSRC signed shareholder compacts: CSIR, AISA, NRF, SANSA and HSRC	Approved annual performance plans and (CSIR, HSRC, NRF, SANSA, ASSAF, AISA) Strategic plans tabled in Parliament: CSIR, AISA, NRF, HSRC, TIA, SANSA and ASSAF signed shareholder compacts: CSIR, AISA, NRF, SANSA and HSRC	Approved annual performance plans and (CSIR, HSRC, NRF, SANSA, ASSAF, AISA) Strategic plans tabled in Parliament: CSIR, AISA, NRF, HSRC, TIA, SANSA and ASSAF signed shareholder compacts: CSIR, AISA, NRF, SANSA and HSRC	Approved DST public entities strategic and annual performance plans and signed shareholder compact by 31 March 2013	Approved DST public entities strategic and annual performance plans and signed shareholder compact by 31 March 2014	Approved DST public entities strategic and annual performance plans and signed shareholder compact by 31 March 2015	Approved DST public entities strategic and annual performance plans and signed shareholder compact by 31 March 2016	

1 DST public entities strategic plans and annual performance plans are approved by the Minister, and the shareholder compacts are signed by the Minister and Board Chairpersons of the DST public entities.

Outputs	Performance indicator(s)	Strategic target	Audited/Actual Performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
In-year monitoring reports	Number of DST performance reports (quarterly reports and annual reports) approved by DST Exco and signed by DG	12 DST quarterly performance reports approved by DST Exco and signed by the DG within 60 days after each quarter	Approved DST performance reports	Approved DST performance reports	Approved DST performance reports	Approved DST quarterly performance reports by 31 March 2012	4 DST 2013/14 quarterly performance reports approved by DST Exco and signed by the DG within 60 days after each quarter	4 DST 2014/15 quarterly performance reports approved by DST Exco and signed by the DG within 60 days after each quarter	4 DST 2015/16 quarterly performance reports approved by DST Exco and signed by the DG within 60 days after each quarter	
	(quarterly reports approved and signed within 60 days after the end of each quarter)	3 DST annual report approved by DST Exco and signed by the DG by 31 May 2015					1 DST 2012/13 annual report approved by DST Exco and signed by the DG by 31 May 2013	1 DST 2013/14 annual report approved by DST Exco and signed by the DG by 31 May 2014	1 DST 2014/15 annual report approved by DST Exco and signed by the DG by 31 May 2015	
DST public entities' annual reports	Number of DST public entities annual reports submitted to Parliament	27 DST public entities' annual reports submitted to Parliament by 30 September 2015	All public entities' annual reports were tabled (AISA, ASSAF, CSIR, SANEDI, HSRC, NRF and SACNASP)	All public entities' annual reports were tabled (AISA, ASSAF, CSIR, SANEDI, HSRC, NRF and SACNASP)	All public entities' annual reports were tabled (AISA, ASSAF, CSIR, TIA, SANEDI, HSRC, NRF and SACNASP)	Tabled DST entities' annual reports by 30 September 2012	9 DST public entities' 2012/13 annual reports submitted to Parliament by 30 September 2013	9 DST public entities' 2013/14 annual reports submitted to Parliament by 30 September 2014	9 DST public entities' 2014/15 annual reports submitted to Parliament by 30 September 2015	
Strategic objective: To facilitate the development of a competent, productive and representative workforce within the Department										
Suitable skills and competencies for the Department	Vacancy rate reduced to a set rate	Vacancy rate reduced to 6% by 31 March 2016	12,26 % vacancy rate	9,02% vacancy rate	8,8% vacancy rate	Vacancy rate reduced to 8% by 31 March 2013	Vacancy rate reduced to 7% by 31 March 2014	Vacancy rate reduced to 6% by 31 March 2015	Vacancy rate reduced to 6% by 31 March 2016	



Outputs	Performance indicator(s)	Strategic target	Audited/Actual Performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: To enable and capacitate the Department through resource allocation and strategic support to achieve its mandate										
Estimates of National Expenditure (ENE)	DST ENE Chapter and database submitted to National Treasury	ENE Chapter and database submitted to National Treasury by 31 January 2016	ENE Chapter and database submitted to National Treasury	ENE Chapter and database submitted to National Treasury	ENE Chapter and database submitted to National Treasury	ENE Chapter and database submitted to National Treasury by 31 January 2013	DST 2014 ENE Chapter and database submitted to National Treasury by 31 January 2014	DST 2015 ENE Chapter and database submitted to National Treasury by 31 January 2015	DST 2016 ENE Chapter and database submitted to National Treasury by 31 January 2016	
Strategic objective: To proactively partner with the Department in optimising organisational performance and improving levels of compliance with relevant policies, frameworks and legislative requirements.										
Enterprise Architecture for the DST	Number of Enterprise Architecture Development Lifecycle steps developed and implemented ³	8 Enterprise Architecture Development Lifecycle steps developed and implemented by 31 March 2016			New indicator	1 Enterprise Architecture Development Lifecycle step developed and implemented by 31 March 2013	2 Enterprise Architecture Development Lifecycle steps developed and implemented by 31 March 2014	3 Enterprise Architecture Development Lifecycle steps developed and implemented by 31 March 2015	3 Enterprise Architecture Development Lifecycle steps developed and implemented by 31 March 2016	
IT Governance Framework for the DST	Number of IT Governance Framework components implemented ⁴	7 IT Governance Framework components implemented by 31 March 2016			New indicator	1 IT Governance Framework plan developed by 31 March 2013	3 IT Governance Framework components implemented by 31 March 2014	2 IT Governance Framework components implemented by 31 March 2015	2 IT Governance Framework components implemented by 31 March 2016	

3 The Enterprise Architecture Development Lifecycle steps will be developed and implemented according to Government Wide Enterprise Architecture (GWEA) framework, Version 2.1.

4 The DST IT Governance Framework is implemented in line with the DPSA Public Service Corporate Governance of Information and Communication Technology Policy Framework, December 2012.

Outputs	Performance indicator(s)	Strategic target	Audited/Actual Performance				Estimated performance	Medium-term targets			
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16	
Strategic objective: To proactively position the Department positively both internally and externally to ensure informed employees and citizenry											
DST communication, marketing and/or media plans	Number of DST communication, marketing and/or media plans ⁵ developed for DST programmes to profile the Department by DST Exco and to inform the citizenry approved by DST Exco	18 DST communication, marketing and/or media plans developed for DST programmes to profile the Department by DST Exco by 31 March 2016	2 communication, marketing and/or media plans developed for DST programmes to profile the Department	4 communication, marketing and/or media plans developed for DST programmes to profile the Department	4 communication, marketing and/or media plans developed for DST programmes to profile the Department	6 communication, marketing and/or media plans developed for DST programmes to profile the Department approved by DST Exco by 31 March 2013	6 communication, marketing and/or media plans developed for DST programmes to profile the Department approved by DST Exco by 31 March 2014	6 communication, marketing and/or media plans developed for DST programmes to profile the Department approved by DST Exco by 31 March 2015	6 communication, marketing and/or media plans developed for DST programmes to profile the Department approved by DST Exco by 31 March 2016		
Science and technology media coverage monitoring media reports	Number of Science and Technology media coverage monitoring reports approved by DST Exco	12 Science and Technology media coverage monitoring reports approved by DST Exco by 31 March 2016	4 Science and Technology media coverage monitoring reports	4 Science and Technology media coverage monitoring reports approved by DST Exco	4 Science and Technology media coverage monitoring reports approved by 31 March 2013	4 Science and Technology media coverage monitoring reports approved by DST Exco by 31 March 2013	4 Science and Technology media coverage monitoring reports approved by DST Exco by 31 March 2014	4 Science and Technology media coverage monitoring reports approved by DST Exco by 31 March 2015	4 Science and Technology media coverage monitoring reports approved by DST Exco by 31 March 2016		
Public Participation Programme	Number of public participation programmes ⁷ conducted	30 public participation programmes conducted by 31 March 2016	4 public participation programmes conducted	5 public participation programmes conducted	6 public participation programmes conducted	10 public participation programmes conducted by 31 March 2013	10 public participation programmes conducted by 31 March 2014	10 public participation programmes conducted by 31 March 2015	10 public participation programmes conducted by 31 March 2016		

5 The communication, marketing and media plans are developed in consultation with and approved by DST Exco.
 6 The Department identifies 6 key main departmental events/ activities annually that are approved by DST and the Minister. These events are IKS National Conference and National Recordal System, World Space Week, National Science Week, Global Forum on Innovation, the Budget Vote and the Women in Science.
 7 Public participation programmes are aimed at communicating government activities to stakeholders in general and the public in particular, in an attempt to close the communication gap between government and the citizenry.



Table 4: Quarterly targets for 2013/14 financial year

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Percentage alignment of DST planning documents	Quarterly	80% Aligned 2014/15 DST planning documents (strategic plan, annual performance plan submitted to Parliament by 31 March 2014 90% aligned 2014 DST ENE and 2014/15 APP by 31 March 2014	No target	First draft DST strategic plan and annual performance plan submitted to National Treasury and Presidency by 31 August 2013	Second draft DST strategic plan and annual performance plan submitted to National Treasury and Presidency by 30 November 2013 1st draft DST ENE Chapter inputs submitted to Finance by 31 December 2013	80% Aligned Strategic plan and 2014/15 annual performance plan submitted to Parliament by 31 March 2014 2nd draft DST ENE Chapter inputs and MTEF database inputs submitted to Finance by 31 January 2014 90% aligned 2014 DST ENE and 2014/15 APP by 31 March 2014
Approved DST public entities' strategic and annual performance plans and shareholder's compacts	Quarterly	Approved 2014/15 DST public entities strategic and annual performance plans and signed shareholder compacts by 31 March 2014	No target	First Draft Strategic Plans and Annual Performance Plans for DST public entities (HSRC, SANSa, TIA, AISA, ASSAf, NRF) submitted to National Treasury by 31 August 2013	Second Draft Strategic Plans and Annual Performance Plans for DST public entities (HSRC, SANSa, TIA, AISA, ASSAf, NRF) submitted to National Treasury by 30 November 2013	Approved 2014/15 Strategic Plans and Annual Performance Plans for DST public entities (HSRC, SANSa, TIA, AISA, ASSAf, NRF) by the Minister by 28 February 2014 Signed Shareholder Compacts by the Minister and Chairpersons of Boards of DST public entities by 31 March 2014 (CSIR, HSRC, SANSa, TIA, AISA, ASSAf, NRF)

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of DST performance reports (quarterly reports and annual reports) approved by DST Exco and signed by DG	Quarterly and annually	4 DST quarterly performance reports approved by DST Exco and signed by the DG within 60 days after each quarter	1 DST 2012/13 fourth quarterly performance report approved by DST Exco and signed by the DG within 60 days after the end of the quarter	1 DST 2013/14 first quarter performance report approved by DST Exco and signed by the DG within 60 days after the end of the first quarter	1 DST 2013/14 second quarter performance report approved by DST Exco and signed by the DG within 60 days after the end of the second quarter	1 DST 2013/14 third quarter performance report approved by DST Exco and signed by the DG within 60 days after the end of the third quarter
Number of DST public entities annual reports submitted to Parliament	Annually	9 DST public entities' 2012/13 annual reports submitted to Parliament by 30 September 2013	No target	9 DST public entities' annual reports (CSIR, HSRC, SANSA, TIA, AISA, ASSAF, NRF, SACNASP and NACI) submitted to Parliament by 30 September 2013	No target	No target
Vacancy rate reduced to a set rate	Quarterly	Vacancy rate reduced to 7% by 31 March 2014	No target	Vacancy rate reduced to 10% by 30 September 2013	Vacancy rate reduced to 8% by 31 December 2013	Vacancy rate reduced to 7% by 31 March 2014
ENE Chapter and database submitted to National Treasury	Bi-annually	ENE Chapter and database submitted to National Treasury by 31 January 2014	No target	No target	1st draft ENE Chapter and database submitted to National Treasury by 15 December 2013	Final ENE Chapter and database submitted to National Treasury by 31 January 2014
Number of Enterprise Architecture Development Lifecycle steps developed and implemented	Quarterly	2 Enterprise Architecture Development Lifecycle steps developed and implemented by 31 March 2014	Architecture Vision step (phase 1 of 2) developed and implemented by 30 June 2013	Architecture Vision step (phase 2 of 2) developed and implemented by 30 September 2013	Architecture Vision step (phase 1 of 2) developed and implemented by 31 December 2013	Business Architecture step (phase 2 of 2) developed and implemented by 31 March 2014



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of IT governance framework components implemented	Quarterly	3 IT Governance framework components implemented by 31 March 2014	IT Risk Management & Control (Phase 1 of 2) components developed and implemented by 30 June 2013	IT Risk Management & Control (Phase 2 of 2) components developed and implemented by 30 September 2013	IT Governance Reporting structure implemented by 31 December 2013	IT Accountability structure implemented by 31 March 2014
Number of DST communication, marketing and/or media plans developed for DST programmes to profile the Department and to inform the citizenry approved by DST Exco	Quarterly	6 approved communication, marketing and or/ media plans developed for DST Programmes to profile the Department by 31 March 2014	1 approved communication, marketing and or/ media plans developed for DST Programmes to profile the Department by 30 June 2013	1 approved communication, marketing and or/ media plans developed for DST Programmes to profile the Department by 31 September 2013	2 approved communication, marketing and or/ media plans developed for DST Programmes to profile the Department by 31 December 2013	2 approved communication, marketing and or/ media plans developed for DST Programmes to profile the Department by 31 March 2014
Number of Science and Technology media coverage monitoring reports approved by DST Exco	Quarterly	4 science and technology media coverage monitoring reports approved by DST Exco by 31 March 2014	1 science and technology media coverage monitoring report approved by DST Exco by 30 June 2013	1 science and technology media coverage monitoring report approved by DST Exco by 30 September 2013	1 science and technology media coverage monitoring report approved by DST Exco by 31 December 2013	1 science and technology media coverage monitoring report approved by DST Exco by 31 March 2014
Number of public participation programmes conducted	Quarterly	10 public participation programmes conducted by 31 March 2014	3 public participation programmes conducted by 30 June 2013	4 public participation programmes conducted by 30 September 2013	1 public participation programmes conducted by 31 December 2013	2 public participation programmes conducted by 31 March 2014

Table 5: Expenditure Estimates

ADMINISTRATION DETAIL BY SUBPROGRAMME									
R thousand	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16		
	Actual outcome			Medium-term estimates					
Ministry	3 192	3 303	3 453	3 669	3 853	4 065	4 252		
Management	58 208	64 812	63 703	86 559	90 254	102 198	107 052		
Corporate Services	90 285	113 204	119 666	126 594	160 882	170 737	183 277		
Governance	5 772	5 425	5 858	8 411	8 755	9 281	9 708		
Office Administration	1 665	2 114	2 876	4 196	4 414	4 679	4 894		
Total	159 122	188 858	195 556	229 429	268 158	290 960	309 183		
Compensation of employees	82 637	94 254	102 916	120 896	123 222	137 041	147 437		
Goods and services	68 945	85 016	86 543	105 463	131 207	139 523	146 535		
Transfers and subsidies	1 005	1 425	1 036	1 000	1 151	12 087	12 796		
Total payment for capital assets	6 458	7 940	4 780	2 070	2 178	2 309	2 415		
Total	159 122	188 858	195 556	229 429	268 158	290 960	309 183		



PROGRAMME 2: RESEARCH, DEVELOPMENT AND INNOVATION

Strategic overview

Purpose

The purpose of this Programme is to facilitate knowledge generation and exploitation through R&D in key priority areas, namely, space science, biotechnology, health and energy. The Programme also supports the exploitation of South Africa's knowledge stock by stimulating the development of innovative products and services, and their commercialisation where appropriate.

The strategic direction of the Programme is informed by the national priorities articulated in national policies, such as the New Growth Path (NGP), the Industrial Policy Action Plan (IPAP), the Presidency's Outcomes Framework, as well as S&T-related policies. The Programme recently reviewed its performance environment with the aim of redefining its vision, objectives and performance metrics. The review was necessitated by the changes in the local and global S&T environment and the need to align its work to the national priorities of the country.

Over the medium-term, the Programme will support the development and demonstration of technology-based solutions to address key national priorities and for commercialisation. The Programme aspires to see technology solutions developed in the laboratories moving to the commercial market and applied by communities. In this regard, the Programme will continue to support R&D initiatives and ensure that research outputs are developed, commercialised and applied. The success of the Programme's efforts will be measured by the extent to which the products or services developed through financial and technical support provided by the Department through SANSA, TIA (including the biotechnology platforms) serve the needs of end users and consumers.

The Programme also provides leadership and support to optimise the development of technology-based solutions for both commercial and public use. In this regard, the Programme is expected to provide policy leadership in the areas of intellectual property (IP) management, space science, biotechnology, health and energy. In the medium term the Programme will focus on finalising the Bioeconomy Strategy and its implementation plan, ensuring that the astronomy advantage areas are declared and appropriate regulations are developed to protect them, finalising and implementing the National Space Programme, developing energy solutions to address South Africa's energy security challenges, and developing and publishing guidelines and practice notes in respect of IP rights from publicly financed research.

Strategic objectives

- To support ongoing research and development and demonstration of technology based solutions with the intension of promoting the commercialisation and use thereof; and
- To provide system-based leadership across the NSI, including regulatory and compliance functions, and support that seek to optimise the commercialisation and use of technology based solutions.

Sub-Programme achievements and Focus

Radio Astronomy Advances (RAA) provides strategic direction on key aspects linked to the construction of the Square Kilometer Array (SKA) telescope and related activities to ensure that Africa is well positioned to host the SKA. The primary purpose of RAA is to manage and control astronomy reserves and to ensure that all the activities and decisions are in compliance with the Astronomy Geographic Advantage (AGA) Act (Act No. 21 of 2007) and associated regulations. RAA provides strategic direction on key aspects linked to the construction of the Square Kilometre Array (SKA) demonstrator telescopes and related activities, such as the African Very Large Baseline Network (AVN).

The major highlights in this area include South Africa and its eight African partner countries being awarded the hosting rights for a major portion of the SKA, as well as the agreement by the Independent Communications Authority of South Africa (ICASA) to migrate broadcasting services in the Northern Cape to alternative frequencies in order to accommodate the requirements of the SKA and the demonstrator telescopes.

The construction of phase I of the SKA is expected to start in the 2016/17 financial year. In the period leading up to the SKA construction, South Africa will build a 64-dish antennae demonstrator telescope, called the MeerKAT. The first of the 64-dish antennae of the MeerKAT is scheduled for completion during the 2013/14 financial year. The MeerKAT telescope and associated infrastructure, classified as a mega project, is due for completion in 2016/17. In addition, the development of the AVN will be enhanced by the South Africa-Ghana partnership to set up a radio telescope/observatory in Ghana.

The key challenge that the sub-programme will need to address is the protection of the astronomy reserves against radio, dust and light pollution, but more specifically looking at whether there are any adverse effects of fracking in the Northern Cape Province on these reserves. The relevant stakeholders and experts will be consulted with regards to preserving the central astronomy advantage areas as new regulations and standards are proposed. The remaining regulations for the central astronomy advantage areas will be published before the end of the 2013/14 financial year.

Space Science and Technology supports the creation of an environment conducive for the implementation of the National Space Strategy and the South African Earth Observation Strategy (SAEOS), which is given expression through a National Space Programme (NSP) and implemented through the National Space Agency of South Africa (SANSA) with support from the National Earth Observation and Space Secretariat (NEOSS). The NSP is underpinned by a suite of platforms and initiatives such as the hosting of a Earth Observation Data Centre (EODC) and portal; contributing to the African Resource Management Constellation (ARMC) of satellites; establishment of a permanent satellite calibration and validation site; and supporting cutting edge research and development of remote sensing applications through user relevant products and services.

The subprogramme has successfully established the National Earth Observation and Space Secretariat, which is intended to support the implementation of the South African Earth Observation Strategy (SAEOS) in general and the South African component of the Group on Earth Observation (SA-GEO). SA-GEO is primarily focused on engaging the South African earth observation community to (i) identify and document earth observation user needs that directly relate to national priorities, (ii) promote the integrated, coordinated, interoperable and sustained use of earth observations datasets nationally, (iii) enable the South African earth observation community to draw on the globally integrated, coordinated, interoperable and sustained earth observation systems of the Group on Earth Observation; and (iv) identify relevant data sets, both nationally and globally, and make them available through the SAEOS portal.

The Earth Observation Data Centre housed and developed by SANSA specifically focuses on being a repository and archive for satellite based Earth Observation data acquired by South Africa and is accessible via the SAEOS portal, although not exclusively. Data in the EODC, together with in-situ data sets in the South African Environmental Observation Network (SAEON) and elsewhere, is made available through the SAEOS portal and provide users with access to geospatial data.

The subprogramme will also support the work of the African Union Commission for articulating an African Space Policy and an African Space Strategy and for which purpose South Africa currently chairs a Working Group on Space comprising of African member states representative of the five African regions (north-, east-, southern-, west- and central-Africa). South Africa also offers secretariat support to the Working Group to ensure that its work is facilitated and concluded by October 2013.

Hydrogen and Energy plays a key role in developing a sustainable and globally competitive South African energy knowledge base and industry that will ensure broader socio-economic benefits for the country from, amongst others, the nascent global hydrogen economy. The subprogramme's main objective is to support research, development and innovation in the energy



domain, which will address the country's three main energy challenges, namely, security of supply, reduction of the carbon footprint and increase energy access for a third of the South African population that is not currently connected to the grid. A number of technologies were selected to address these three main areas. These are technologies that can be used for both on and off grid applications.

In the commercialisation space, the Hydrogen South Africa (HySA) Programme made successful progress in negotiating joint commercialisation agreements with international private sector partners. These transactions are for the manufacture of high temperature membrane electrode assemblies (HTMEA), with a German partner, and the production of hydrogen storage materials, with a Norwegian partner. It is anticipated that the manufacturing plants will be erected during the second quarter of the 2013/2014 financial year for both transactions. Further commercialization opportunities will be explored during the 2013/2014 financial years with industry partners.

During the 2013/2014 financial years the HySA Board will be launched by the Minister of Science and Technology, followed by the five year review of the HySA Centres of Competence. In the area of renewable energy, the department is finalising the solar energy road map that will give birth to the Solar Energy Centre of Competence during the 2013/2014 financial year. In the field of nuclear energy, the department will also finalise the Nuclear Energy Research Development and Innovation Strategy.

Critical to the successful implementation of all the energy initiatives is the ability to store energy generated during off peak consumption periods. In this regard the DST is currently working on the energy storage value proposition and will largely be informed by the fact that South Africa has 80% of the world's manganese reserves. The cathode materials for the lithium ion batteries, therefore, will be manganese based. Lithium ion batteries are used for many applications including storage of renewable energy and it is envisaged that the implementation of the energy storage value proposition will facilitate the integration of renewable energy into the grid, as well as assist Eskom to manage the supply and demand fluctuations.

Biotechnology and Health Innovation uses innovation instruments that provide financial, intellectual property and innovation management support. Recognising shortcomings in the delivery of the National Biotechnology Strategy (2001), where the pipeline of commercialisable products was found to be lacking, the Biotechnology objectives for this year are to engage with key stakeholders to revise the range of DST interventions to appropriate components of the value chain, and thereby enhance functioning of the NSI. This will include engagement with the TIA, NRF, CSIR and the development of a governance structure for technology platforms and bioinformatics development, amongst others, to strengthen institutional arrangements, develop linkages and support structures necessary for the implementation of the Bioeconomy Strategy.

The subprogramme will also continue to support a number of existing interventions across the various biotechnology and health innovation value chains. These interventions are aimed at contributing towards HCD, research and skills support, technology platforms and related infrastructure, and will also address some of the priorities identified by the broader innovation system on areas of competitive advantage and national priority. The strategic health innovation initiatives will address the need for innovative products and services for the prevention, treatment and diagnosis of diseases such as tuberculosis, malaria, HIV/ Aids, Diabetes, cardiovascular diseases and cancer.

Innovation Instruments and Planning (IPI) drives strategic interventions that will enable South Africa to translate a greater proportion of its scientific knowledge outputs into commercial technology products and services. The subprogramme was established in 2005 to drive strategic innovation policy interventions that have led to the establishment of TIA and the finalisation of the Intellectual Property Rights from Publicly Funded Research and Development (IPR-PFRD) Act in 2008. This Act has provided for the establishment of NIPMO that started operating as an interim office within the DST in 2011. During 2012 NIPMO was engaged in setting up and formalising its structures through the development of a feasibility study for the creation of a specialised services delivery unit within the DST. NIPMO will be formalised from April 2013, and will continue with the implementation of the IPR-PFRD Act in the forthcoming years. In addition, it will facilitate the formation and capacity

development of OTTs at institutions, and provides funding for the protection and commercialisation of IP emanating from publicly financed R&D in higher education institutions and science councils

In 2011/12, the subprogramme completed a repositioning paper, which informs its strategic direction post the establishment of TIA and NIPMO. Over the medium term, the subprogramme plans to support the DST and the work of TIA in innovation and technology commercialisation. This will be achieved through developing innovation policy recommendations and assisting in facilitating partnerships with the private sector where appropriate. The subprogramme will strive to create greater opportunities for partnerships between the public and private sectors with a view to encouraging increased uptake of locally developed technologies in the market.



Annual performance information and MTEF estimates

Table 6: Programme 2 annual performance information for 2013/14

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets			
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16	
Strategic objective: To support ongoing research and development and demonstration of technology based solutions with the intention of promoting the commercialisation and use thereof											
Research and development initiatives	Number of research and development initiatives ⁸ (including strategic infrastructure) financially and strategically supported and which would lead to publications, patterns and prototypes	48 research and development hydrogen and energy and bioscience initiatives financially and strategically supported that would lead to knowledge generation and prototypes by 31 March 2016	1 health research and innovation initiative in non-communicable diseases	2 research chairs financially supported	4 research chairs financially supported through NRF	6 research chairs and 6 research initiatives in biosciences and energy related fields financially supported by 31 March 2013	20 research and development initiatives in hydrogen and energy and biosciences related fields financially and strategically supported and which would lead to publications, patterns and prototypes by 31 March 2014	14 research and development hydrogen and energy and bioscience initiatives financially and strategically supported and which would lead to publications, patterns and prototypes 31 March 2015	14 research and development hydrogen and energy and bioscience initiatives financially and strategically supported and which would lead to publications, patterns and prototypes by 31 March 2016		
MeerKAT antennae	Number of MeerKAT antennae designed and installed as per SKA specifications	56 MeerKAT antennae designed and installed as per SKA specifications by 31 March 2016	Preparation of KAT-7 infrastructure and construction facilities completed	Construction of KAT-7 completed and KAT-7 commissioned to conduct astronomy research operations	A contract to construct roads, electrical reticulation and the MeerKAT construction site camp was awarded and the site was handed over to the contractor	1 MeerKAT antennae designed and installed as per SKA specifications by 31 March 2013	4 MeerKAT antennae designed and installed as per SKA specifications by 31 March 2014	15 MeerKAT antennae designed and installed as per SKA specifications by 31 March 2015	37 MeerKAT antennae designed and installed as per SKA specifications by 31 March 2016		

8 Research and development initiatives refers to centers of competences, research chairs, hubs and spokes as well as research and development programme supported through hydrogen and energy and biotechnology and health, while strategic infrastructure refers to the biotechnology platforms and HySA infrastructure.

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Technology solutions,	Number of technology solutions ⁹ supported in the areas of space science, energy and biosciences through DST funding provided to institutions and agencies	12 technology solutions (proof of concepts, pilots and demonstrators) financially supported in the areas of space science, energy and biosciences through DST funding by 31 March 2016				New indicator	3 technology solutions (proof of concepts, pilots and demonstrators) financially supported in the areas of space science, energy and biosciences through DST funding by 31 March 2014	5 technology solutions (proof of concepts, pilots and demonstrators) financially supported in the areas of space science, energy and biosciences through DST funding by 31 March 2015	4 technology solutions (proof of concepts, pilots and demonstrators) financially supported in the areas of space science, energy and biosciences through DST funding by 31 March 2016	
Technology based products/ processes	Number of technology based products/ processes developed through TIA investments ¹⁰	115 technology based products/ pre-process developed through TIA investments by 31 March 2016	No baseline	No baseline	10 new technology products, processes or services developed	5 technology based products/ processes developed through TIA investments by 31 March 2013	30 technology based products/ processes developed through TIA investments by 31 March 2014	40 technology based products/ processes developed through TIA investments by 31 March 2015	45 technology based products/ processes developed through TIA investments by 31 March 2016	
Technology solutions ¹¹	Number of technology solutions that are either commercialised or used by the community in the areas of space science, energy or bioscience	68 technology solutions that are either commercialised or used by the community in the areas of space science, energy or biosciences by 31 March 2016				New indicator	15 technology solutions that are either commercialised or used by the community in the areas of space science, energy or biosciences by 31 March 2014	23 technology solutions that are either commercialised or used by the community in the areas of space science, energy or biosciences by 31 March 2015	30 technology solutions that are either commercialised or used by the community in the areas of space science, energy or biosciences by 31 March 2016	

9 Technology solutions refer to technology products, services, proof concepts, pilots and demonstrators.

10 Products/services developed through TIA investment refers to the products and or services that a developed by the market as a result of TIA funding

11 Technology solutions refer to the technology products and services that have been released to the market or community for use.



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Investment commercialised	Number of investments commercialised ¹² through TIA funding	50 TIA investment commercialised by 31 March 2016	No baseline	No baseline	No baseline	10 TIA investments commercialised through TIA funding by 31 March 2013	12 TIA investments commercialised through TIA funding by 31 March 2014	15 TIA investment commercialised through TIA funding by 31 March 2015	18 TIA investment commercialised through TIA funding by 31 March 2016	
To provide system based leadership, including regulatory and compliance functions, and support that seek to optimize the commercialisation and use of technology based solutions										
Concept notes, reviews and strategy documents	Number of concept notes and reviews ¹³ approved by DST Exco and strategies approved by Parliament	17 concept notes, reviews approved by DST Exco by 31 March 2016 1 Bioeconomy strategy approved by Parliament by 30 September 2013	No baseline	No baseline	1 Intellectual property policy guideline on MeerKAT and SKA-related research Review of technology platforms	3 policy briefs and concept documents (HySA review, 1 biotechnology and health innovation policy brief and 1 costing model for bioscience/biotechnology platforms) developed by 31 March 2013	9 concept notes, reviews approved by DST Exco by 31 March 2014 1 Bioeconomy strategy approved by Parliament by 30 September 2013	4 concept notes, reviews approved by DST Exco by 31 March 2015	4 concept notes, reviews approved by DST Exco by 31 March 2016	

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Investment commercialised refers to the technologies that have been commercialized or realized to the market as a result of TIA funding
Concept notes are documents that include market analysis, feasibility studies, value propositioning and business cases; reviews relate to reviews undertaken with respect to the initiatives we support with a view of assessing performance or for strategic redirection.

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Guidelines to the IPR-PFRD Act	Number of guidelines and practice note to the IPR PFRD Act approved by the Minister and gazetted	7 Guidelines/ Practice Notes to the IPR-PFRD Act approved by the Minister and gazetted by 31 March 2016 Amendments to the IPR-PFRD Act Regulations approved by the Minister and gazetted by 31 March 2016	No baseline	No baseline	No baseline	2 Guidelines and 2 Practice Notes to the IPR-PFRD Act approved by the Minister and gazetted by 31 March 2013	3 Guidelines (incentive scheme, IP ownership –multiparty collaboration and developments agreements and Referral – no ownership/ no statutory protection decision and I Dispute Practice Note to the IPR-PFRD Act approved by the Minister and gazetted by 31 March 2014	2 Guidelines to the IPR-PFRD Act approved by the Minister and gazetted by 31 March 2015	2 Guidelines to the IPR-PFRD Act approved by the Minister and gazetted by 31 March 2016 Amended Regulations to the IPR-PFRD Act approved by the Minister and gazetted by 31 March 2016	



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance			Estimated performance			Medium-term targets		
			2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16		
Regulations	Number of regulations on Astronomy Advantage Area gazetted	3 regulations (frequency spectrum, electronic magnetic interference and SKA procedural matters) gazetted by 28 February 2014 and 1 Karoo coordinate regulations gazetted by 30 June 2014	No baseline	Northern Cape Province declared as Astronomy Advantage Area(AAA)	Karoo core declared as Astronomy Advantage Area(AAA)	Karoo Central declared as Astronomy Advantage Area by 31 March 2013 Regulation on protection of all core AAA published for public comments by 31 March 2013 Regulations on Frequency spectrum published for public comments by 31 March 2013 Regulations on Electro Magnetic Interference (EMI) published for public comments by 31 March 2013 Regulations on procedural matters published for public comments by 31 March 2013	3 Regulations (Frequency spectrum; Electronic Magnetic Interference and SKA procedural matters) gazetted by 28 February 2014	1 Karoo coordinated regulations gazetted by June 2014			

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Collaborative partnerships with the private sector	Number of new collaborative partnerships with the private sector through signed memorandum of understanding	11 collaborative partnership with the private sector through signed memorandum of understanding 31 March 2016					New indicator	3 collaborative partnerships with the private sector through signed memorandum of understanding by 31 March 2014	4 collaborative partnership with the private sector through signed memorandum of understanding by 31 March 2015	4 collaborative partnership with the private sector through signed memorandum of understanding by 31 March 2016
Offices of technology transfer	Number of offices of technology transfer (OTTs) financially supported in terms of the contracts signed with institutions and science councils where reporting requirements and sign-off are indicated	12 offices of technology transfer financially supported by 31 December 2015	No baseline	4 new OTTs established (Gauteng, KwaZulu Natal, Western Cape and Eastern Cape	No new OTTs funded	4 offices of technology transfer financially supported by 31 March 2013	10 offices of technology transfer financially supported by 31 December 2013	12 offices of technology transfer financially supported by 31 December 2014	12 ¹⁴ offices of technology transfer financially supported by 31 December 2015	12 ¹⁴ offices of technology transfer financially supported by 31 December 2015
New disclosures received	Number of new disclosures ¹⁵ received by offices of technology transfer at institutions	900 new disclosures received by offices of technology transfer by 31 March 2016			New indicator	150 new disclosures received by offices of technology transfer by 31 March 2013	250 new disclosures received by offices of technology transfer by 31 March 2014	300 new disclosures received by offices of technology transfer by 31 March 2015	350 new disclosures received by offices of technology transfer by 31 March 2016	350 new disclosures received by offices of technology transfer by 31 March 2016

¹⁴ This is a cumulative number of OTTs that will be supported over the medium term in order to ensure sustainability.

¹⁵ The Intellectual Property Rights from Publicly Financed Research and Development Act defines disclosure as provision of full details of potential intellectual property.



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance			Medium-term targets		
			2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2013/14	2014/15	2015/16
IP rebates	Number of institutions awarded rebates for intellectual property (IP) prosecution and maintenance costs from the IP Fund and approved by the Director General	79 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund by 31 March 2016	No baseline	No baseline	20 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund	22 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund by 31 March 2013	24 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund by 31 March 2014	26 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund by 31 March 2015	29 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund by 31 March 2016			

Table 7: Quarterly targets

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of research and development initiatives (including strategic infrastructure) financially and strategically supported and which would lead to publications, patterns and prototypes	Quarterly	20 research and development initiatives in hydrogen and energy and biosciences related fields financially and strategically supported and which would lead to publications, patterns and prototypes by 31 March 2014	Approved business plans from agencies and institutions on the research and development initiatives by 30 June 2013	3 HySA CoC, 1 Renewable Energy Hub, 3 spokes, 3 research chairs (1 Clean Coal and 2 Biofuels) financially and strategically supported by 30 September 2013	No target	1 Solar CoC financially and strategically supported by 31 March 2014
						5 R&D initiatives (South African Malaria Initiative, South African HIV/AIDS Research and innovation Platform, South African TB Research and Innovation Initiative, Nuclear Technologies in Medicine and Biosciences Initiative, and South African Non-communicable Diseases Research Initiative) financially supported by 31 March 2014



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
						4 research and development initiatives (1 technology platform, 1 biocatalysis, 1 biomufacturing and 1 BiosafetySA) financially supported by 31 March 2014
Number of MeerKAT antennae designed and installed as per SKA specifications	Annually	4 MeerKAT antennae designed and installed as per SKA specifications by 31 March 2014	No target	No target	No target	4 MeerKAT antennae designed and installed as per SKA specifications by 31 March 2014
Number of technology solutions supported in the areas of space science, energy and biosciences through DST funding provided to institutions and agencies	Bi-annual	3 technology solutions (proof of concepts, pilots and demonstrators) financially supported in the areas of space science, energy and biosciences through DST funding by 31 March 2014	No target	1 Algae Bio-fuels technology demonstrator supported through DST funding by 30 September 2013	No target	1 Bio-energy atlas supported through DST funding by 31 March 2014
			No target	No target	No target	1 Resyn technology platform supported through DST funding by 31 March 2014

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of regulations on Astronomy Advantage Area declared through gazette	Quarterly	3 Regulations (Frequency spectrum; Electronic Magnetic Interference and SKA procedural matters) gazetted by 28 February 2014	Public consultation on the first draft regulations on frequency spectrum by 30 June 2013	Finalised 2nd draft regulation on frequency spectrum by 30 September 2013	Regulations on Frequency spectrum gazetted by 31 December 2013	Regulations on Electro Magnetic Interference gazetted by 28 February 2014
Number of technology solutions that are either commercialised or used by the community in the areas of space science, energy or biosciences	Quarterly	15 technology solutions that are either commercialised or used by the community in the areas of space science, energy or biosciences by 31 March 2014	Public consultation on the first draft regulations on SKA procedural matters by 30 June 2013	Finalised 2nd draft regulation on SKA procedural matters by 30 September 2013		Regulations on SKA procedural matters gazetted by 28 February 2014
			5 end-user services/products in space programme provided through SANSa by 30 June 2013	2 end-user services/products provided by SANSa through its Space Science programme by 30 September 2013	1 end-user services/products provided by SANSa through its Space Science programme by 31 December 2013	2 end-user services/products provided by SANSa through its Space Science programme by 31 March 2014
				2 end-user Earth Observation services/products provided by SANSa by 30 September 2013		2 end-user Earth Observation services/products provided by SANSa by 31 March 2014



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of technology based products/ processes developed through TIA investments	Quarterly	30 technology products/ processes developed through TIA investments by 31 March 2014	7 technology products/ processes developed through TIA investments by 30 June 2013	7 technology products/ processes developed through TIA investments by 30 September 2013	8 technology products/ processes developed through TIA investments by 31 December 2013	8 technology products/ processes developed through TIA investments by 31 March 2014
Number of investments commercialised through TIA funding	Quarterly	12 TIA investments commercialised through TIA funding by 31 March 2014	2 TIA investments commercialised through TIA funding by 30 June 2013	3 TIA investments commercialised through TIA funding by 30 September 2013	3 TIA investments commercialised through TIA funding by 31 December 2013	4 TIA investments commercialised through TIA funding by 31 March 2014
Number of guidelines and practice notes to the IPR PFRD Act approved by the Minister and gazetted	Quarterly	3 Guidelines (incentive scheme, IP ownership –multiparty collaboration and developments agreements and Referral –no ownership/no statutory protection decision) and 1 Dispute Practice Note to the IPR-PFRD Act approved by the Minister and gazetted by 31 March 2014.	3 Guidelines (incentive scheme, IP ownership –multiparty collaboration and developments agreements and Referral –no ownership/no statutory protection decision) and 1 Dispute Practice Note to the IPR-PFRD Act approved by 30 June 2013	Public consultation to present and discuss the drafted 3 Guidelines ((incentive scheme, IP ownership –multiparty collaboration and developments agreements and Referral –no ownership/no statutory protection decision) and 1 Dispute Practice Note to the IPR-PFRD Act approved by 30 September 2013	3 Guidelines (incentive scheme, IP ownership –multiparty collaboration and developments agreements and Referral –no ownership/no statutory protection decision) and 1 Dispute Practice Note to the IPR-PFRD Act approved by 31 December 2013	3 Guidelines (incentive scheme, IP ownership –multiparty collaboration and developments agreements and Referral –no ownership/no statutory protection decision) and 1 Dispute Practice Note to the IPR-PFRD Act approved by 31 March 2014

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of concept notes and reviews approved by DST Exco and strategies approved by Parliament	Bi-annual	9 concept notes and reviews approved by DST Exco by 31 March 2014	No Target	3 concept notes and reviews (Advanced battery technology, Nuclear energy research development and innovation strategy and Solar energy technology road map) in hydrogen and energy approved by DST Exco by 30 September 2013	No Target	1 concept notes (Energy grand challenge) in hydrogen and energy approved by DST Exco by 31 March 2014 3 concept notes and reviews (1 on technology service platforms, 1 on DoH (Dept of Health) incentives for locally developed drugs and 1 on bio-based products) approved by DST Exco by 31 March 2014 2 concept notes and reviews (Health Innovation and Material Transfer Agreements) approved by DST Exco by 31 March 2014
		1 Bioeconomy strategy approved by Parliament by 30 September 2013		1 Bioeconomy strategy approved by Parliament by 30 September 2013		



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of offices of technology transfer (OTTs) financially supported in terms of the contracts signed with institutions and science councils where reporting requirements and sign-off are indicated	Quarterly	10 offices of technology transfer financially supported by 31 December 2013	Evaluated proposals for financial support from Offices for Technology Transfer against DST Guiding Principles for Office of Technology Transfer by 30 June 2013	Signed off funding agreements by 30 September 2013	10 offices of technology transfer (Universities of Cape town, Pretoria, Kwazulu Natal, Nelson Mandela Metropolitan, Stellenbosch, Cape Peninsula university of technology, Tshwane university of Technology and Nuclear Energy Cooperation South Africa) financially supported by 31 December 2013	No target
Number of new disclosures received by offices of technology transfer at institutions	Bi-annually	250 new disclosures received by offices of technology transfer at institutions by 31 March 2014	No target	Received and evaluated disclosures from Offices of Technology Transfer at institutions by 30 September 2013	No target	250 new disclosures received by offices of technology transfer at institutions by 31 March 2014
Number of institutions awarded rebates for intellectual property (IP) prosecution and maintenance costs from the IP Fund as recommended by the IP fund Committee and approved by the Director General	Quarterly	24 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund by 31 March 2014	Placed a call for applications for a rebate from the IP Fund by 30 June 2013	No Target	Evaluated applications for a rebate from the IP Fund in line with the requirements set out in Guideline 2.1 of 2012 of the IP Fund by 31 December 2013	24 institutions awarded a rebate for IP prosecution and maintenance costs from the IP Fund by 31 March 2014

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of collaborative partnerships with private sector through signed memorandum of understanding	Annually	3 collaborative partnerships private sector through signed memorandum of understanding by 31 March 2014	No Target	No Target	No Target	1 Mycotoxin R&D partnership and 2 health partnerships with private sector through signed memorandum of understanding by 31 March 2014



Table 8: Expenditure Estimates

RESEARCH, DEVELOPMENT AND INNOVATION DETAIL BY SUBPROGRAMME							
R thousand	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
	Actual outcome			Budget	Medium-term estimates		
Space Science	575 166	88 607	130 780	373 593	809 305	833 689	891 771
Hydrogen and Energy	146 755	130 844	145 641	146 012	147 987	156 645	163 739
Biotechnology and Health	253 907	153 794	102 744	128 552	130 399	136 524	142 694
Innovation Planning and Instruments	165 522	429 349	4 75 779	494 660	539 454	476 993	503 823
Total	1 141 350	802 774	854 944	1 142 807	1 627 145	1 603 851	1 702 027
Compensation of employees	17 136	21 156	25 227	32 617	35 280	39 036	40 832
Goods and services	15 374	16 036	17 835	17 401	22 230	21 924	22 932
Total transfer and subsidies	1 108 500	763 848	811 139	1 092 558	1 569 635	1 542 891	1 638 263
Total payment for capital assets	340	1 688	695	231	-	-	-
Total	1 141 350	802 774	854 944	1 142 807	1 627 145	1 603 851	1 702 027

PROGRAMME 3: INTERNATIONAL COOPERATION AND RESOURCES

Strategic Overview

This Programme is responsible for positioning the DST and South Africa as a strategic international partner with respect to STI cooperation, in both bilateral and multilateral contexts, and increasingly also with respect to private multinational corporations. The intention is to maximise the benefit to the South African NSI from opportunities to access international STI resources such as research funding, knowledge networks, research infrastructure and institutions, policy discourses, and official development assistance.

In line with the National Development Plan, the Programme work will focus on regional and continental integration to maximise national interest. In particular, participation in multilateral forums will aim to ensure that South Africa remains an influential member of the international community on S&T matters. The ongoing work of the BRICS senior S&T officials will ensure the deepening of S&T cooperation with Brazil, Russia, India and China.

In pursuing this strategic task, the Programme is informed by the DST priorities as they are articulated in the TYIP and the NRDS, and a range of other DST research plans, strategies and priorities (in domains such as nanotechnology, ICT, astronomy and advanced manufacturing) that complement the TYIP and NRDS.

In addition, the Programme guides the DST's international activities so as to support national imperatives such as the Medium Term Strategic Framework: Strategic Priority 1 (Speeding up growth and transforming the economy to create decent work and sustainable livelihoods through ongoing engagements with the European Union and development partners for their continued support of the Department's work on Innovation for Poverty Alleviation); Strategic Priority 2 (Strengthening the human resources base by facilitating technical assistance, students and researcher mobility and exchanges and facilitating the participation of South African researchers in international research programmes); and Strategic Priority 3 (Pursuing African advancement and enhanced international cooperation by facilitating trilateral cooperation with international development partners and advancing the continent's interests through bilateral cooperation and in multilateral forums).

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.

Strategic objectives

- To secure foreign STI funds that will stimulate knowledge production, technology transfer, enhanced innovation, and STI human capital development in pursuit of STI based socio-economic development in South Africa.
- To secure South African and foreign funds for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa.
- To increase access to global knowledge and STI networks that will result in knowledge production, technology transfer, enhanced innovation and STI human capital development to support the NSI.
- To increase the number of South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development in support of the NSI.



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.

Annual performance information and MTEF estimates

Table 9: Programme 3 annual performance information for 2013/14

Output	Performance indicator	Strategic target	Audited/actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: To secure foreign STI funds that will stimulate knowledge production, technology transfer, enhanced innovation, and STI human capital development in pursuit of STI based socio-economic development in South Africa										
Foreign STI funds secured from international partners for knowledge production, technology transfer, enhanced innovation, and STI human capital development	Amount (expressed in Rand millions) of foreign STI funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development from international partners through agreed instruments	R990m foreign STI funds secured from international partners for knowledge production, technology transfer, enhanced innovation, and STI human capital development through agreed instruments by 31 March 2016	R472m in foreign STI funds leveraged	R327m in foreign STI funds leveraged	R285m in foreign STI funds leveraged	R240m foreign STI funds secured from international partners for knowledge production, technology transfer, enhanced innovation, and STI human capital development through agreed instruments by 31 March 2013	R300m foreign STI funds secured from international partners for knowledge production, technology transfer, enhanced innovation, and STI human capital development through agreed instruments by 31 March 2014	R330m foreign STI funds secured from international partners for knowledge production, technology transfer, enhanced innovation, and STI human capital development through agreed instruments by 31 March 2015	R360m foreign STI funds secured from international partners for knowledge production, technology transfer, enhanced innovation, and STI human capital development through agreed instruments by 31 March 2016	



Output	Performance indicator	Strategic target	Audited/actual performance					Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13	2013/14		2014/15	2015/16	
Strategic objective: To secure South African and foreign funds for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa											
South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa	Amount (expressed in Rand millions) of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa as agreed with foreign partners	R253,3m of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa as agreed with foreign partners by 31 March 2016	R20,6m South African and foreign funds spent on S&T-based socio-economic development in Africa	R40,8m of South African and foreign funds spent on S&T-based socio-economic development in Africa	R63,8m of South African and foreign funds spent on S&T-based socio-economic development in Africa	R46,5m of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa as agreed with foreign partners by 31 March 2013	R85,2m of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa as agreed with foreign partners by 31 March 2014	R79,1m of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa as agreed with foreign partners by 31 March 2015	R89m of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa as agreed with foreign partners by 31 March 2016		

Output	Performance indicator	Strategic target	Audited/actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
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 participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development	The number of foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners	12 565 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2016	3 880 foreign participants in global knowledge and STI networks	2 513 foreign participants in global knowledge and STI networks	3 460 foreign participants in global knowledge and STI networks	800 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2013	3 985 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2014	4 095 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2015	4 485 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2016	



Output	Performance indicator	Strategic target	Audited/actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: To increase the number of South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development in support of the NSI										
South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development	Number of South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners	2 565 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2016	633 South African students participating in international cooperative STI research projects	514 South African students participating in international cooperative STI research projects	1270 South African students participating in international cooperative STI research projects	450 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2013	855 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2014	790 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2015	920 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2016	

Table 10: Quarterly targets for 2013/14

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Amount (expressed in Rand millions) of foreign STI funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development from international partners through agreed instruments	Quarterly	R300m foreign STI funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development from international partners through agreed instruments by 31 March 2014	R28m foreign STI funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development from international partners through agreed instruments by 30 June 2013	R33m foreign STI funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development from international partners through agreed instruments by 30 September 2013	R27m foreign STI funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development from international partners through agreed instruments by 31 December 2013	R212m foreign STI funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development from international partners through agreed instruments by 31 March 2014
Amount (expressed in Rand millions) of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, as well as a competent and equitable pool of SET skills in Africa	Quarterly	R85,2m South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa by 31 March 2014	R3m South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa by 30 June 2013	R7m South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa by 30 September 2013	R10m South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa by 31 December 2013	R65,2m South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa by 31 March 2014



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
The number of foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners	Quarterly	3 985 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2014	160 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 30 June 2013	660 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 30 September 2013	160 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 December 2013	3 005 foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2014
Number of South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners	Quarterly	855 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2014	107 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 30 June 2013	187 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 30 September 2013	107 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 December 2013	454 South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners by 31 March 2014

Table 11: Expenditure Estimates

INTERNATIONAL COOPERATION AND RESOURCES DETAIL BY SUBPROGRAMME							
R thousand	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
		Actual outcome		Budget	Medium-term estimates		
Multilateral Cooperation and Africa	54 601	58 236	59 132	57 865	61 282	64 973	67 944
International Resources	39 238	39 853	42 610	50 934	51 948	54 983	57 494
Overseas Bilateral Cooperation	23 635	33 295	30 534	30 518	35 200	37 230	38 924
Total	117 474	131 384	132 276	139 317	148 430	157 186	164 362
Compensation of employees	27 915	31 154	31 836	35 467	40 959	43 418	45 415
Goods and services	13 681	19 924	16 324	24 448	20 681	21 677	18 687
Total transfer and subsidies	75 642	79 786	83 552	79 402	86 790	92 091	100 260
Total payment for capital assets	236	480	502	-	-	-	-
Total	117 474	131 384	132 276	139 317	148 430	157 186	164 362



PROGRAMME 4: HUMAN CAPITAL AND KNOWLEDGE SYSTEMS

Strategic Overview

As its name implies, this Programme focuses on ensuring that South Africa's research base is maintained, strengthened and grown in order that it may contribute to the modernisation of South Africa's economy and its move toward being more knowledge-based. Specifically, this implies responsibilities to ensure provision of the required high-level human capital and research infrastructure necessary for advanced research able to produce new knowledge, as well as ensuring ongoing support for research activities, and the development of specific support measures for basic sciences and priority science areas, especially those in which South Africa enjoys a geographic advantage.

The impact of this Programme's work on the NSI will be monitored through indicators such as –

- the contribution of South Africa's research output to global research output;
- the global impact of South Africa's research output;
- the percentage of postgraduate research students enrolling in SET programmes;
- the annual number of doctoral graduates.

The National Development Plan (Vision for 2030) identifies education, training and innovation as being at the centre of South Africa's long-term development, and the National Development Plan specifically states that "inadequate capacity will constrain knowledge production and innovation unless effectively addressed".

The strategic purposes of Programme 4 directly address this imperative through support for HCD, provision of research and innovation infrastructure, and promotion of knowledge generation. With respect to HCD, for example, the National Development Plan recommends that South Africa should produce more than 100 doctoral graduates per million population per year by 2030 (while we currently produce only 28), produce double the number of postgraduate and first-rate scientists, increase the number of African and women postgraduates (especially PhDs), and improve qualifications of academic staff by increasing the percentage of PhD-qualified staff in the higher education sector from the current 34 per cent to over 75 per cent by 2030. Furthermore, in conjunction with the NRF, Programme 4 is the key source of research funding for universities, without which no knowledge generation or postgraduate training could take place. Lastly, this Programme manages the DST research and innovation infrastructure initiatives, a vital source of financial support to public research institutions and universities for research equipment and facilities.

Purpose: Provide leadership to foster an innovative and competitive society with skilled human capital, superior knowledge and research infrastructure.

Strategic objectives

- To contribute to the development of representative, high-level human capital able to pursue locally relevant, globally competitive research and innovation activities.
- To ensure availability of and access to internationally comparable research and innovation infrastructure in order to generate new knowledge and train new researchers.
- To support and promote research that develops basic sciences through production of new knowledge and relevant training opportunities.

- To strategically develop priority science areas in which South Africa enjoys a competitive advantage, by promoting internationally competitive research and training activities and outputs.
- To promote public engagement on science, technology and innovation.

Subprogrammes

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. 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.

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, emerging research areas (nanotechnology, photonics and synthetic biology) and new research areas such as aptamers.



Annual performance information and MTEF estimates

Table 12: Programme 4 annual performance information for 2013/14

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets			
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16	
Strategic objective: To contribute to the development of representative, high-level human capital able to pursue locally relevant, globally competitive research and innovation activities.											
Postgraduate students and fellows awarded bursaries and fellowships through NRF managed programmes	Total number of postgraduate students (BTech and honours, Master's and PhD students, and postdoctoral fellows) awarded bursaries as reflected in the NRF project reports	34 746 postgraduate research students awarded bursaries as reflected in the NRF project reports by 31 March 2016	5 131 honours, Master's, PhD students and postdoctoral fellows awarded bursaries and fellowships	5 945 honours, Master's, PhD students and postdoctoral fellows awarded bursaries and fellowships	7 083 postgraduates (1 692 honours, 3 478 Masters and 1 913 PhD students, and 402 postdoctoral fellows) awarded bursaries and fellowships through NRF-managed programmes	6 100 postgraduates (1 950 BTech and honours, 3 390 Master's and 1 715 PhDs) awarded bursaries and fellowships by 31 March 2013	11 208 postgraduate students (3 196 BTech and honours, 4 677 Master's, and 2 645 PhD students, and 690 postdoctoral fellows) awarded bursaries through NRF-managed programmes by 31 March 2014	11 440 postgraduate students (3 414 BTech and honours, 4 671 Master's, and 2 665 PhD students, and 690 postdoctoral fellows) awarded bursaries through NRF-managed programmes by 31 March 2015	12 098 postgraduate students (4 300 BTech and honours, 4 500 Master's, and 2 590 PhD students, and 700 postdoctoral fellows) awarded bursaries through NRF-managed programmes by 31 March 2016		
Graduates and students placed in DST-funded work preparation programmes in science, engineering and technology institutions (SETI)	Total number of graduates and students placed in DST-funded work preparation programmes in SETI institutions	2 500 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2016	160 graduates and students placed in DST-funded work preparation programmes in SETI institutions	272 graduates and students placed in DST-funded work preparation programmes in SETI institutions	275 graduates and students placed in DST-funded work preparation programmes in SETI institutions	550 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2013	700 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2014	1 000 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2015	800 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2016		

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance			Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12		2012/13	2013/14	2014/15
Strategic objective: To ensure availability of and access to internationally comparable research and innovation infrastructure in order to generate new knowledge and train new researchers									
Research infrastructure grants	Number of research infrastructure grants awarded as per award letters	180 research infrastructure grants awarded by 31 March 2016	27 NEP/NNEP research equipment grants awarded	36 NEP/NNEP research equipment grants awarded	50 research infrastructure grants awarded	50 research infrastructure grants awarded as per award letters by 31 March 2013	60 research infrastructure grants awarded as per award letters by 31 March 2014	60 research infrastructure grants awarded as per award letters by 31 March 2015	60 research infrastructure grants awarded as per award letters by 31 March 2016
A Gigabit per second capacity broadband network providing transmission of data to all research and academic institutions	Average amount of bandwidth per SANReN site per annum	3 200 Mbps average bandwidth per SANReN site by 31 March 2016				New indicator	2 200 Mbps average bandwidth capacity available per SANReN site by 31 March 2014	3 200 Mbps average bandwidth capacity available per SANReN site by 31 March 2015	4 200 Mbps average bandwidth capacity available per SANReN site by 31 March 2016



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: To support and promote research that develops basic sciences through production of new knowledge and relevant training opportunities										
Researchers awarded research grants through NRF-managed programmes	Total number of researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports.	11 740 researchers awarded research grants through NRF-managed programmes by 31 March 2016	2 442 researchers awarded research grants through NRF-managed programmes	2 600 researchers awarded research grants through NRF-managed programmes	2 886 researchers awarded research grants through NRF-managed programmes	2 600 researchers awarded research grants through NRF-managed programmes by 31 March 2013	3 822 researchers awarded research grants through NRF-managed programmes by 31 March 2014	3 876 researchers awarded research grants through NRF-managed programmes by 31 March 2015	4 042 researchers awarded research grants through NRF-managed programmes by 31 March 2016	
Internationally accredited research articles from researchers awarded research grants through NRF-managed programmes	Number of Institute for Scientific Information (ISI)-accredited research articles published by NRF-funded researchers as reflected in the NRF project reports.	17 200 ISI-accredited research articles published by NRF-funded researchers as reflected in the NRF project reports by 31 March 2016	2 753 ISI-accredited research articles published by NRF-funded researchers	3 935 ISI-accredited research articles published by NRF-funded researchers	4 777 ISI-accredited research articles published by NRF-funded researchers	4 000 ISI-accredited research articles published by NRF-funded researchers by 31 March 2013	5 500 ISI-accredited research articles published by NRF-funded researchers by 31 March 2014	5 700 ISI-accredited research articles published by NRF-funded researchers by 31 March 2015	6 000 ISI-accredited research articles published by NRF-funded researchers by 31 March 2016	

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: To strategically develop priority science areas in which South Africa enjoys a competitive advantage, by promoting internationally competitive research and training activities and outputs.										
Strategy documents	Number of strategy documents approved by the DST Executive Committee	I STEMI promotion and engagement strategy for the NSI, and its implementation plan approved by the DST Exco by 31 March 2015	No baseline	No baseline	No baseline	Approved concept and framework for the STEMI promotion and engagement strategy by the DST Exco by 31 March 2013	I STEMI promotion and engagement strategy for the NSI, approved by the DST Exco by 31 March 2014	I implementation plan for the promotion and engagement strategy for the NSI approved by DST Exco by 31 March 2015		
		I implementation plan for the Palaeosciences Strategy approved by the DST Exco by 31 March 2014	No baseline	No baseline	No baseline	Draft implementation plan for the Palaeosciences Strategy completed by 31 March 2013	I implementation plan for the Palaeosciences Strategy approved by the DST Exco by 31 March 2014			
		I Draft Marine Biology Research Strategy approved by DST Exco by 30 September 2014	No baseline	No baseline	No baseline	Terms of reference for the development of the Marine Biology research strategy finalised by 31 March 2013	I Draft Marine Biology Research Strategy presented to DST Exco by 31 March 2014	I Marine Biology Research Strategy approved by the DST Exco by 30 September 2014		



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
		I Antarctic Research Strategy approved by DST Exco by 31 March 2015	No baseline	No baseline	No baseline	A DST Exco approved concept document for developing an Antarctic Research Strategy by 31 March 2013	I Antarctic Research Strategy approved by the DST Exco by 31 March 2014	I Antarctic Research Strategy implementation plan approved by the DST Exco by 31 March 2015		
		I Implementation Plan for the National Bioprospecting platform developed and approved by DST Exco by 31 March 2014	No baseline	No baseline	No baseline	National Bioprospecting Platform Strategy approved by EXCO by 31 March 2013	I Implementation Plan for the National Bioprospecting platform developed and approved by DST Exco by 31 March 2014			
		A bill for the protection, promotion, development and management of IK tabled before parliament by 31 March 2016	No baseline	No baseline	No baseline	An EXCO approved draft legislation for the protection, promotion, development and management of IK by 31 March 2013	Cabinet memorandum on draft legislation for the protection, promotion, development and management of IK approved by the Minister by 31 March 2014	Bill on the protection, promotion, development and management of IK approved by Parliament by 31 March 2015	Regulations on the protection of IK approved by the Minister by 31 March 2016	

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
NRS in provinces	Number of provinces with established National Recordal Systems (NRS) and coordinators appointed	A National Recordal System (NRS) established in 4 provinces by 31 March 2016	Multilingual solution requirement specification completed. NIKSO content management system website and research study on IKS Centre model completed	Finalisation of system architecture for National IK Management System and establishment of 1 IKS centre	NRS catalogue system developed and data collection work implemented in 4 provinces (North West, KwaZulu-Natal, Northern Cape and Limpopo) by 31 March 2012) Establishment of an NRS in North West (1) and Limpopo (1)	A functional NRS established with coordinators appointed in Eastern Cape (1) and Free State (1) by 31 March 2013	1 province (Western Cape) with the NRS infrastructure deployed and with a coordinator appointed by 31 March 2014	2 provinces (Mpumalanga and Northern Cape) with the NRS infrastructure deployed and with a coordinator per province appointed by 31 March 2015	1 province (Gauteng) with the NRS infrastructure deployed and with a coordinator appointed by 31 March 2016	
Indigenous knowledge-based technological innovations	Number of indigenous knowledge-based technological innovations developed ¹⁶ and registered as intellectual property	12 indigenous knowledge-based technological innovations developed and registered as intellectual property by 31 March 2016	3 indigenous knowledge Systems Bioprospecting and Product Development projects funded	2 clinical studies initiated	2 clinical studies completed	5 indigenous knowledge-based technological innovations developed by 31 March 2013	3 indigenous knowledge-based technological innovations developed and registered as intellectual property by 31 March 2014	4 indigenous knowledge-based technological innovations developed and registered as intellectual property by 31 March 2015	5 indigenous knowledge-based technological innovations developed and registered as intellectual property by 31 March 2016	

16 Indigenous knowledge-based technological innovations refers to products and processes developed from indigenous knowledge, e.g. African traditional medicines and therapies, cosmeceuticals, nutraceuticals, functional foods, indigenous teas and coffees.



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: To promote public engagement on science, technology and innovation.										
Participants ¹⁷ in science awareness and engagement programmes managed by the NRF and other service providers	Total number of participants in science awareness and engagement programmes as reflected in the NRF project reports and those of other service providers	2 825 806 people participated in science awareness and engagement programmes	238 543 people participated in science awareness and engagement programmes	252 776 people participated in science awareness and engagement programmes	751 217 people participated in science awareness & engagement programmes	385 000 participants (331 000 learners, 54 000 members of the public) in science awareness and engagement programmes by 31 March 2013	904 646 participants (876 250 learners, 28 396 members of the public) in science, awareness and engagement programmes by 31 March 2014	942 160 participants (913 500 learners, 28 660 members of the public) in science awareness and engagement programmes by 31 March 2015	979 000 participants (950 000 learners, 29 000 members of the public) in science awareness and engagement programmes by 31 March 2016	

17 Measured by visitors to sites hosting awareness and engagement activities, or number of people reached through media.

Table 13: Quarterly targets for 2013/14

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1st	2nd	3rd	4th
Total number of postgraduate students (BTech and honours, Master's and PhD students, and postdoctoral fellows) awarded bursaries as reflected in the NRF project reports	Quarterly	11 208 postgraduate students (3 196 BTech and honours, 4 677 Master's and 2 645 PhD students, and 690 postdoctoral fellows) ¹⁸ awarded bursaries as reflected in the NRF project reports by 31 March 2014	6 600 postgraduate students and 300 postdoctoral fellows awarded bursaries through NRF-managed programmes by 30 June 2013	8 750 postgraduate students and 550 postdoctoral fellows awarded bursaries through NRF-managed programmes by 30 September 2013	10 000 postgraduate students and 600 postdoctoral fellows awarded bursaries through NRF-managed programmes by 31 December 2013	10 518 postgraduate students and 690 postdoctoral fellows awarded bursaries through NRF-managed programmes by 31 March 2014
Total number of graduates and students placed in DST-funded work preparation programmes in SETI institutions	Annually	700 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2014	No target	No target	No target	700 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2014
Number of research infrastructure grants awarded as per award letters	Bi-annually	60 research infrastructure grants awarded as per award letters by 31 March 2014	No target	Call for proposals on awarding of research infrastructure grants issued by 30 September 2013	No target	60 research infrastructure grants awarded as per award letters by 31 March 2014
Average amount of bandwidth per SANReN site per annum	Bi-annually	2 200 Mbps average bandwidth capacity available per SANReN site by 31 March 2014	No target	Project contracting with academic institutions concluded by 30 September 2013	No target	2 200 Mbps average bandwidth capacity available per SANReN site by 31 March 2014

18 The targets on the postgraduate students and postdoctoral fellows are cumulative over the four quarters of the financial year.



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1st	2nd	3rd	4th
Number of strategy documents approved by DST Exco	Quarterly	I STEMl promotion and engagement strategy for the NSI approved by the DST Exco by 31 March 2014	Stakeholder consultation on the latest draft strategy conducted by 30 June 2013	Revised draft STEMl promotion and engagement strategy for the NSI incorporating stakeholders' inputs by 30 September 2013	Presentation of the draft strategy to DST Exco by 31 December 2013	I STEMl promotion and engagement strategy for the NSI approved by the DST Exco by 31 March 2014
		I implementation plan for the Palaeosciences Strategy approved by the DST Exco by 31 March 2014	Presentation of the draft implementation plan for the Palaeosciences Strategy to the stakeholders for inputs conducted by 30 June 2013	Development of the draft implementation plan for the Palaeosciences Strategy completed by 30 September 2013	Presentation of the draft implementation plan for the Palaeosciences Strategy to DST Exco by 31 December 2013	I implementation plan for the Palaeosciences Strategy approved by the DST Exco by 31 March 2014
		I Draft Marine Biology Research Strategy presented to DST Exco by 31 March 2014	Establishment of the working group for the development of the strategy by 30 June 2013	First draft of the Marine Biology Research Strategy completed by 30 September 2013	Stakeholder inputs on the first draft of the Marine Biology Research Strategy incorporated by 31 December 2013	Presentation of the final draft Marine Biology Research Strategy to DST Exco by 31 March 2014
		I Antarctic Research Strategy approved by DST Exco by 31 March 2014	First draft of the Antarctic Research Strategy completed by 30 June 2013	Stakeholder inputs on the first draft of the Antarctic Research Strategy incorporated by 30 September 2013	Presentation of the draft Antarctic Research Strategy to DST Exco by 31 December 2013	I Antarctic Research Strategy approved by DST Exco by 31 March 2014

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1st	2nd	3rd	4th
		Cabinet memorandum on draft legislation for the protection, promotion, development and management of IK approved by the Minister by 31 March 2014	Consultation with 15 government Departments and 9 Provincial governments conducted on the draft Bill on the promotion, development and management of IK by 30 June 2013	Integration of comments from National and Provincial Governments into the Bill concluded by 30 September 2013	Report for the ESEID developed by 16 October 2013 Bill on the promotion, development and management of IK approved by Cabinet for consultation by 4 December 2013	Cabinet memorandum on draft legislation for the protection, promotion, development and management of IK approved by the Minister by 31 March 2014
		I implementation plan for the National Bioprospecting platform developed and approved by DST Exo by 31 March 2014	Establishment of the working group for the development of the implementation plan concluded by 30 June 2013	First draft of the implementation plan for the National Bioprospecting platform completed by 30 September 2013	Stakeholder inputs on the first draft of the implementation plan for National Bioprospecting platform incorporated by 31 December 2013	I implementation plan for the National Bioprospecting platform approved by the DST Exo by 31 March 2014
Number of provinces with established NRS and coordinators appointed	Quarterly	I province (Western Cape) with the NRS infrastructure deployed and with a coordinator appointed by 31 March 2014	Host institution for IKSDC establishment in the Western Cape identified by 30 June 2013	IKSDC business and operational plan finalised by host institution and approved by DST Exo by 30 September 2013	Refinement of IKSDC recording methodology process, appointment of project Steering Committee and IKSDC coordinator by 31 December 2013	IKSDC Coordinator and recorders trained on recordal methodology; IKSDC equipped with NRS IT infrastructure ; and coordinator in I province (Western Cape) appointed by 31 March 2014



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1st	2nd	3rd	4th
Number of indigenous knowledge-based technological innovations developed and registered as intellectual property	Annually	3 indigenous knowledge-based technological innovations developed and registered as intellectual property by 31 March 2014	No target	No target	No target	3 indigenous knowledge-based technological innovations developed and registered as intellectual property by 31 March 2014
Total number of researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports	Quarterly	3 822 researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports by 31 March 2014	1 000 researchers awarded research grants through NRF-managed programmes by 30 June 2013	2 000 researchers awarded research grants through NRF-managed programmes by 30 September 2013	3 000 researchers awarded research grants through NRF-managed programmes by 31 December 2013	3 822 researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports by 31 March 2014
Number of Institute for Scientific Information (ISI)-accredited research articles published by NRF-funded researchers as reflected in the NRF project reports	Annually	5 500 ISI-accredited research articles published by NRF-funded researchers by 31 March 2014	No target	No target	No target	5 500 ISI-accredited research articles published by NRF-funded researchers by 31 March 2014
Total number of participants in science awareness and engagement programmes as reflected in the NRF project reports and those of other service providers	Quarterly	904 646 people participated in science awareness and engagement programmes by 31 March 2014	Grant funding awarded to organisations implementing the initiatives by 30 June 2013	National Science Week conducted by 30 September 2013	3 science festivals & 6 STEMI olympiads & competitions conducted by 31 December 2013	4 science festivals conducted & annual report on people's participation in science centers received by 31 March 2014

Table 14: Expenditure Estimates

HUMAN CAPITAL AND KNOWLEDGE SYSTEMS DETAIL BY SUBPROGRAMME							
R thousand	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
	Actual outcome			Budget	Medium-term estimates		
Human Capital and Science Platforms	1 119 136	1 243 722	1 408 028	1 433 896	1 706 855	1 857 855	2 346 474
Indigenous Knowledge Systems	23 525	25 259	17 440	27 551	31 715	33 497	35 045
Emerging Research Areas and Infrastructure	448 696	485 163	530 860	603 286	738 251	792 185	1 036 317
Total	1 591 357	1 754 144	1 956 334	2 064 673	2 476 821	2 683 537	3 417 836
Compensation of employees	18 112	19 369	20 565	24 647	25 596	26 506	27 725
Goods and services	7 577	10 251	7 725	5 366	10 000	10 000	10 500
Total transfer and subsidies	1 565 430	1 724 332	1 927 690	2 034 544	2 441 225	2 647 031	3 379 611
Total payment for capital assets	238	179	131	116	-	-	-
Total	1 591 357	1 754 144	1 956 334	2 064 673	2 476 821	2 683 537	3 417 836



PROGRAMME 5: SOCIO-ECONOMIC PARTNERSHIPS

Strategic Overview

Over the next three years, the work of the Programme continues to be informed by priorities emerging from the Economic Sectors and Employment and Social Protection and Community Development Clusters, the Industrial Policy Action Plan, the sustainable development plan of action including efforts to transition to a green economy, and efforts to support development in priority district municipalities. In the 2013/ 14 financial year, the activities and initiatives of Programme 5 will also be reviewed to facilitate alignment to the National Development Plan and recommendations made by the Ministerial Review Committee on the STI Landscape in South Africa.

In far as the Economic Sectors and Employment Cluster's work is concerned, a key focus will remain job creation. The Programme will attempt to contribute in two ways. First, by testing and experimenting with technology or science-based opportunities for creating jobs. For example, there are well-developed or mature agricultural technologies that have not been effectively deployed in a South African context. Through demonstration projects, the DST tests how these technologies can be applied in a South African context. On the basis of a review of how best to structure the work of the Programme to achieve the outcome of job creation and make an impact on wealth creation in the long term, the Programme intends strengthening work to capture the lessons learnt from these initiatives and, in a focused and targeted way, to provide the lessons to a variety of roleplayers, including local economic development agencies, to support replication and scaling-up of initiatives that are successful.

The second contribution that the Programme will make to job creation is to provide funding support for RDI interventions that support the competitiveness of existing industries or create new industrial development opportunities. The focus of the Programme is on a range of capabilities that can make a short to medium-term contribution to firms and industries. This includes new high-level HCD and a variety of IP of use and relevance to firms and industries. The IP includes patents and patent applications, as well as other forms of IP that are of value, such as methodologies, data packs, demonstrators, prototypes, technology platforms and technology transfer packages. In the past few years, the Programme has introduced a number of initiatives and interventions, which are at various stages of implementation. A key characteristic of all of the initiatives and interventions that are supported by the DST is the close link to broader government priorities (for example, minerals beneficiation, the green economy, building the manufacturing sector and strengthening the ICT sector).

Within the Social Protection and Community Development Cluster, there is increasing focus on accelerating service delivery and transforming social and economic development. The National Development Plan also highlights the spatial dimension of underdevelopment and the need for building capability. New approaches to and models for service delivery, including new technology-based approaches, are considered key areas of opportunity. These include technology-based opportunities for tackling rural development, education and health, as well as technologies that support planning and delivery within government.

In response to the challenges highlighted above, a review was undertaken to determine how the DST could provide value-added support to service delivery and social development challenges. This review highlighted that the DST could provide maximum value-add by focusing on the generation of knowledge and evidence on approaches to service and social development and to facilitate structured learning programmes. The transition to this approach started in the 2012/13 financial year, and included a refinement of the strategic objectives that guide work in this area, the definitions of performance indicators, the outputs of the Programme, and the way in which the Programme will organise itself to deliver on the new approach and focus. Further refinements to operational models and approaches will be made over the next three years.

Finally, the Department has identified the need to grow and strengthen its capacity to manage STI policy. This will include enhancing the monitoring of the performance of the sector in South Africa in comparison to similar countries, including how the sector is contributing to growth and development. It will also be necessary to evaluate the impact of past and current

interventions. Over the past few years, the Programme has matured a number of data collection systems and instruments, including the Research Information Management System, surveys on RDI, the tracking of public expenditure on S&T, and the development of indicators. In addition to building and consolidating data collection systems and instruments, the Programme will also focus on extracting relevant information to support predetermined policy questions and issues.

Purpose: This Programme enhances the growth and development priorities of government through targeted science and technology interventions and the development of strategic partnerships with other government departments, industry, research institutions and communities.

Strategic objectives

- Through knowledge, evidence and learning, to inform and influence¹⁹ how science and technology 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 niche high-potential Science, Technology, and Innovation (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 National System of Innovation (NSI).
- To identify, grow and sustain 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 aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs.

Subprogrammes

- **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 innovation policy and planning support to economic actors in priority economic sectors and provincial and local governments.

¹⁹ Inform and influence' – one of the responsibilities of the DST is to encourage the widespread use of new and better approaches based on science and technology to address a range of social challenges. However, the DST does not have the mandate or responsibility for putting in place the arrangements that would support the adoption of new and better approaches. This is normally done by government departments which service delivery responsibilities (for example, providing water and energy services or building houses in a new way). The approach used by a service delivery departments, whether through direct procurement or through some policy instrument (such as a subsidy, a regulation, or by issuing standards), have a significant impact on what technologies are used. The role of the DST is to invest in projects and processes (such as pilots and demonstrators) that can generate useful and appropriate knowledge and evidence that can be used by service delivery departments to make better decisions on what approaches to use as well as supporting good practices in the application of science and technology. The generation of knowledge and evidence needs to be complemented by structured learning processes such as conferences, workshops and decision-support systems to diffuse the available knowledge and evidence into the delivery systems of government.



- **Science and Technology for Social Impact** supports the experimentation of technology and science-based innovations for tackling poverty including the creation of sustainable job and wealth opportunities, building sustainable human settlements, and enhancing the delivery of basic services. 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. The focus is on supporting the widespread adoption and use of promising technology and science-based innovation by supporting the generation of practical knowledge and insights, producing suitable policy evidence, introducing decision-support tools, and the building of capacity for managing technology or innovation in service delivery agencies.
- **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 the NSI and innovation policy. This includes an annual national survey of research and experimental development (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 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.

Table 15: Programme 5 annual performance information for 2013/14

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: Through knowledge, evidence, and learning, to inform and influence how science and technology can be used to transform rural and socio-economic development, government planning and service delivery, and the building of sustainable human settlements										
Livelihoods created through technology based opportunities	Number of livelihoods ²⁰ created sustained or improved ²¹	1 240 livelihood opportunities created, sustained or improved by 31 March 2016 ²²	396 livelihood opportunities created	467 livelihood opportunities created	632 jobs opportunities were sustained by the end of 2011/12	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	420 livelihood opportunities created, sustained or improved by 31 March 2016	
Knowledge products	Number of knowledge products ²³ on technology-led opportunities for sustainable livelihoods published	7 knowledge products published ²⁴ by 31 March 2016	No baseline	No baseline	No baseline	1 knowledge product (policy brief) published by 31 March 2013	2 knowledge products ²⁵ published by 31 March 2014	2 knowledge products published by 31 March 2015	3 knowledge products published by 31 March 2016	

20 Livelihoods: refers to both direct employment and a self-employment component. Direct employment or jobs refer to full-time, seasonal or temporary jobs in which people are paid for their labour (physical, intellectual, etc.). The DST uses the EDD job creation reporting measure for non-PERSAL, non-EPWP project employment is calculated as the sum of the number of weeks of employment created overall, for all the participants, divided by 42. The DST agrees to report the number of studentships, that are not workplace based appointments, as well as the number of learnerships or internships, that are workplace based appointments. The self-employment component includes support to entrepreneurs and small scale farmers by supplying training, mentoring and/or products and services. Through Sustainable Livelihoods initiatives, these entrepreneurs and small-scale farmers should be able to increase their income.

21 Created refers to new livelihood that arose in the course of the reporting year through a DST-supported project and which was not previously reported. Sustained refers to a livelihood that was included in the reporting that was done in previous financial year but which continue to be supported through DST funding in the current financial year. Improved refers to situations where DST-supported projects provide additional income to a person but may not be the only income opportunity that the person has. The three year target is a sum of the targets for each of the three financial years. Where the livelihood of an individual is supported for more than one financial year (which is the case in many projects), the individual will be counted more than once in the 3-year target.

22 Knowledge products refer to case studies, policy briefs and technology briefs. Different knowledge products may be required to provide the knowledge and evidence required by decision-makers in order to adopt a new technology-based approach. A policy brief is a document that outlines the rationale for selecting a particular policy alternative and aims to convince the target audience that an existing problem can be addressed by adopting an alternative policy alternative or alternative course of action. A case study is a detailed description and exploration of a particular project, with a specific focus on challenges, lessons, and success factors, and is usually targeted to people involved in implementation. A technical brief refers to a range of knowledge products providing performance data, that deal with specifications or which deal with a specific technical challenge that can impact on the adoption of a particular technology. A single project or initiative can support the production of several of the knowledge products described above. Knowledge products can also be supported by a decision-support intervention. A knowledge product has to meet the needs of a particular user-community and therefore requires significant interaction to determine what would be of value.

24 Published: Made public on the DST website.

25 Finalising the form of the specific knowledge product requires extensive consultation with potential users or customer. The exact form will be finalised by the end of June 2013, as indicated in the quarterly targets.



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Knowledge products	Number of knowledge products for government planning, service delivery and the building of sustainable human settlements through innovation	3 knowledge products ²⁶ for government planning, service delivery and the building of sustainable human settlements published by 31 March 2016	No baseline	No baseline	No baseline	1 policy case study for government planning and service delivery improvement through innovation in housing published by 31 March 2013	1 knowledge product for government planning and service delivery improvement through innovation published by 31 March 2014	1 knowledge product for government planning and service delivery improvement through innovation published by 31 March 2015	1 knowledge product for government planning and service delivery improvement through innovation published by 31 March 2016	
Decision-support interventions	Number of decision-support interventions introduced and maintained	5 Decision support systems introduced and maintained by 31 March 2016	No baseline	No baseline	No baseline	2 decision support systems maintained (StepSA and R&V Atlas) by 31 March 2013	2 additional ²⁷ decision support system introduced; and two existing decision support systems maintained and improved (StepSA and R&V Atlas) by 31 March 2014	1 additional decision support systems introduced and four existing decision support systems maintained and improved by 31 March 2015	5 decision support systems maintained and improved by 31 March 2016	
Learning interventions (seminars, briefs and policy papers) generated	Number of learning interventions (seminars, briefs, policy papers) generated	27 learning interventions (seminars, briefs and policy papers) generated by 31 March 2016	No baseline	9 policy interventions (seminars, briefs, policy papers)	9 policy interventions (seminars, briefs, policy papers)	9 policy interventions (seminars, briefs, policy papers) by 31 March 2013	9 learning interventions ²⁸ (seminars, briefs and policy papers) generated by 31 March 2014	9 policy learning interventions (seminars, briefs and policy papers) generated by 31 March 2015	9 policy learning interventions (seminars, briefs and policy papers) generated by 31 March 2016	

26 Knowledge products refer to case studies, policy briefs and technology briefs. Different knowledge products may be required to provide the knowledge and evidence required by decision-makers in order to adopt a new technology-based approach. A policy brief is a document that outlines the rationale for selecting a particular policy alternative and aims to convince the target audience that an existing problem can be addressed by adopting an alternative policy alternative or alternative course of action. A case study is a detailed description and exploration of a particular project, with a specific focus on challenges, lessons, and success factors, and is usually targeted to people involved in implementation. A technical brief refers to a range of knowledge products providing performance data, that deal with specifications or which deal with a specific technical challenge that can impact on the adoption of a particular technology. A single project or initiative can support the production of a single or several of the knowledge products described above. Knowledge products can also be supported by a decision-support intervention. A knowledge product has to meet the needs of a particular user-community and therefore requires significant interaction to determine what would be of value.

27 The additional decision support systems will be identified in consultation with users or customers by the end of the June 2013, as articulated in the quarterly targets.

28 The specific learning interventions will be finalised through a schedule that will be finalised by the end of June 2013, as outlined in the quarterly targets.

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Strategic objective: To identify, grow and sustain niche high-potential STI capabilities for sustainable development and the greening of society and the economy										
High-level ²⁹ human capital developed in the dedicated niche areas of global change sciences and earth system sciences	Number of high-level research graduates (Master's and PhD students) fully funded or co-funded ³⁰ in designated niche areas (global change and earth system sciences)	600 Master's and PhD students fully funded or co-funded in global change sciences and earth system by 31 March 2016	No baseline	84 Master's and PhD students full funded or co-funded for research degrees	232 students funded for research degrees	200 Master's and PhD students fully funded by 31 March 2013	200 Master's and PhD students fully funded or co-funded in global change and earth system sciences by 31 March 2014	200 Master's and PhD students fully funded or co-funded in global change and earth system sciences by 31 March 2015	200 Master's and PhD students fully funded or co-funded in global change and earth system sciences by 31 March 2016	
Knowledge and innovation products: patents, prototypes, technology demonstrators and technology transfer packages, generated	Number of knowledge and innovation products (patents ³¹ , prototypes ³² , technology demonstrators ³³ or transfer packages ³⁴) added to the IP portfolio through fully funded or co-funded research initiatives	6 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio through fully funded or co-funded research initiatives by 31 March 2016	No baseline	3 technology demonstrator added to the IP portfolio	2 additions to the IP portfolio: Passive Underground Mine-water Purification (PUMP) and a diamond fingerprinting technique	1 knowledge and innovation product (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio by 31 March 2013	2 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio by 31 March 2014	2 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio by 31 March 2015	2 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio by 31 March 2016	

29 High level human capital refers to Master and PhD students.

30 Co-funded refers to jointly funded initiatives as per agency contracts with the DST.

31 Patents include formal disclosures (made within the entity, and provisional patent applications).

32 A prototype is a representative model that can perform the required functions of the intended product.

33 A technology demonstrator is a model that demonstrates the functional capability of a specific technology. It is at a lower level of technological maturity than a prototype as it is aimed at demonstrating only the technology functionality.

34 Technology transfer packages are a set of documents, software and/ or training that will allow a third party to use a new technology, in its simplest form it is a data pack and operational instructions to support the transfer of a technology.

35 The knowledge and innovation products will be identified in consultation with implementing agencies during the financial year. As expressed in the quarterly targets.



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Knowledge and innovation products: scientific and technical papers	Number of scientific and technical papers accepted for publication	185 scientific and technical papers accepted for publication by 31 March 2016		23 scientific and technical papers published	62 published scientific and technical papers	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	70 scientific and technical papers accepted for publication by 31 March 2016	
Strategic objective: To enhance understanding and analysis that support improvements in the functioning and performance of the NSI										
Reports and policy briefings ³⁶ on the NSI and innovation policy published	Number of reports and policy briefings on the innovation system and innovation policy approved by DST Exco and/or published	16 reports and policy briefings approved by DST Exco and/or published by 31 March 2016	2007/08 Report on R&D Survey Internal report on 2008/09 report on public funded STAs	2009/10 Report on performance of R&D tax incentive Cabinet Memo on R&D incentive 2008/09 Report on R&D Survey Cabinet Memo on R&D investment in SA Published 2009/10 report of public funding for STAs Cabinet Memo on public funding for STAs Framework for development of knowledge economy indicators	1 Cab Memo and 5 reports produced but not published the R&D tax incentives 2011/12 Report on the performance of the R&D tax incentives Report on public funding for science and technology activities	5 policy briefings published by 31 March 2013	5 reports and policy briefings approved by DST Exco and/or published by 31 March 2014	5 reports and policy briefings approved by DST Exco and/or published by 31 March 2015	6 reports and policy briefings approved by DST Exco and/or published by 31 March 2016	

36 A policy briefing in this context refers to a communication tool produced by policy analysts, in the form of either a Cabinet memorandum or evidence-based report or strategy which serves as an input for action by a defined policy audience such as Cabinet, Parliament and Portfolio Committee, the Minister of Science and Technology, provincial government, or another Minister of government department. The briefing or report may also be used to support broader advocacy initiatives targeting a wide but knowledgeable audience e.g. Economic Services and Infrastructure Cluster, decision-makers, researchers, and administrators.

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance					Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13	2013/14		2014/15	2015/16	
Strategic objective: To identify, grow and sustain 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 aerospace, advanced manufacturing, chemicals, mining advanced metals and ICTs.											
High level human capital development for competitiveness and new industry development built	Number of high-level research graduates (Master's and PhD students) fully funded or co-funded ³⁷ in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs)	782 Master's and PhD research graduates fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs) by 31 March 2016	24 Master's and PhD students fully funded or co-funded in designated niche areas	99 Master's and PhD students fully funded or co-funded in designated niche areas	262 Master's and PhD students fully funded or co-funded in designated niche areas	138 Master's and PhD students fully funded or co-funded in designated niche areas by 31 March 2013	245 Master's and PhD students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs) by 31 March 2014	255 Master's and PhD students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs) by 31 March 2015	273 Master's and PhD students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs) by 31 March 2016		
	Number of interns fully funded or co-funded in R&D of design, manufacturing and product development	460 interns fully funded or co-funded in R&D of design, manufacturing and product development by 31 March 2016				New indicator	130 interns fully funded or co-funded in R&D of design, manufacturing and product development by 31 March 2014	150 interns fully funded or co-funded in R&D of design, manufacturing and product development by 31 March 2015	180 interns fully funded or co-funded in R&D of design, manufacturing and product development by 31 March 2016		



Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Knowledge and innovation products ³⁸ ; patents, technology demonstrators, technology transfer packages or prototypes generated	Number of knowledge and innovation products (patents ³⁹ , prototypes ⁴⁰ , technology demonstrators ⁴¹ or technology transfer packages ⁴²) added to the IP portfolio through fully funded or co-funded research initiatives	60 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio through fully funded or co-funded research initiatives by 31 March 2016	7 patents and 5 technology demonstrators added to the IP portfolio	7 patents and 5 technology demonstrators added to the IP portfolio	14 patents, prototypes, technology demonstrators or technology transfer packages added to the IP portfolio	13 patents, prototypes, technology demonstrators or technology transfer packages added to the IP portfolio by 31 March 2013	15 knowledge and innovation products (patents, technology demonstrators or technology transfer packages or prototypes) added to the IP portfolio by 31 March 2014	20 knowledge and innovation products (patents, technology demonstrators or technology transfer packages or prototypes) added to the IP portfolio by 31 March 2015	25 knowledge and innovation products (patents, technology demonstrators or technology transfer packages or prototypes) added to the IP portfolio by 31 March 2016	
Companies provided with a Technology Assistance Package (TAP)	Number of companies on a register receiving TAPs	160 companies on a register receiving TAPs by 31 March 2016	24 companies provided with TAPs	26 companies provided with TAPs	24 companies continued to be provided with TAPs	50 companies on a register of companies provided with a TAP by 31 March 2013	72 companies on a register receiving TAPs by 31 March 2014	130 companies on a register receiving TAPs by 31 March 2015	160 companies on a register receiving TAPs by 31 March 2016	

38 Knowledge generation in the SET domain is normally associated with the performance of Research and Development (R&D). A number of the programmes and activities within the DST are aimed at building capacity (knowledge, skills, and Science infrastructure) in the general sense, or at the science level where the aim is primarily towards new knowledge generation rather than the industrial application thereof. Some programmes and activities, such as those defined within Strategic Objective 4 (R&D led industry development) are aimed at performing specific R&D activities, jointly identified and based on industry needs, to unlock new markets, products or services. The outcomes of these R&D activities are aimed at innovations and increased competitiveness for the participation firms and industry sectors. The outputs of these R&D activities are therefore aimed at maturing (with the aim to apply) existing knowledge. In the APP these outputs are described as industrially relevant intellectual property, and depending on the nature of the technology development, can consist of technology packages, technology demonstrators, prototypes, pilot plants, etc

39 Patents include formal disclosures (made within the entity, and provisional patent applications).

40 A prototype is a representative model that can perform the required functions of the intended product.

41 A demonstrator is a model that demonstrates the functional capability of a specific technology. It is at a lower level of technological maturity than a prototype as it is aimed at demonstrating only the technology functionality.

42 A technology transfer package is a set of documents, software and/ or training that will allow a third party to use the transferred technology, in its simplest form it is a data pack and operational instructions.

43 The register system measures the number of companies supported with a Technology Assistance Package (TAP) from the date of inception of the programme in 2010.

Outputs	Performance indicator(s)	Strategic target	Audited/Actual performance				Estimated performance	Medium-term targets		
			2009/10	2010/11	2011/12	2012/13		2013/14	2014/15	2015/16
Small and medium enterprise technology support services	Number of small and medium enterprises provided with technology support	9 100 small and medium enterprises receiving technology support by 31 March 2016	1 594 small and medium enterprises supported	1 791 small and medium enterprises supported	A total of 1 918 SMEs received technology support through the Technology Stations Programme	1 928 small and medium enterprises receiving technology support through the Technology Stations Programme by 31 March 2013	2 300 small and medium enterprises receiving technology support through the Technology Stations Programme by 31 March 2014	3 000 small and medium enterprises receiving technology support through the Technology Stations Programme by 31 March 2015	3 800 small and medium enterprises receiving technology support through the Technology Stations Programme by 31 March 2016	



Table 16: Quarterly targets for 2013/14

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of livelihoods created, sustained or improved	Bi-annually	400 livelihood opportunities created, sustained or improved by 31 March 2014	70 livelihoods created, sustained or improved by 30 June 2013	No additional livelihoods created, sustained or improved leaving the total for the financial year at 70 livelihoods by 30 September 2013	30 additional livelihoods created, sustained or improved by 31 December 2013 taking the total for the financial year to 100 livelihoods by 31 December 2013	Additional 300 livelihoods created, sustained or improved by 31 March 2014 taking the total for the financial year to 400 livelihoods by 31 March 2014
Number of knowledge products on technology-led opportunities for sustainable livelihoods published	Annually	2 knowledge products published on DST website by 31 March 2014	Through consultation and review, identify the topics and format of the 2 new knowledge products by 30 June 2013	1 st draft of the 2 identified policy briefs developed by 30 September 2013	Validation and engagement on the 2 policy briefs concluded by 31 December 2013	2 knowledge products published on the DST website by 31 March 2014
Number of knowledge products for government planning, service delivery and the building of sustainable human settlements through innovation	Annually	1 knowledge product for government planning and service delivery improvement through innovation in water published by 31 March 2014	Through consultation and review, the focus of the new policy brief identified by 30 June 2013	1 st draft of the policy brief developed by 30 September 2013	Validation and engagement on policy brief concluded by 31 December 2013	1 knowledge product for government planning and service delivery improvement through innovation in water published by 31 March 2014

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of decision-support interventions introduced and maintained	Quarterly	2 additional systems introduced and; StepSA and R&V Atlas maintained by 31 March 2014	Through consultation and engagement, confirm the focus of the two additional decision support systems that will be introduced by 30 June 2013 Confirm continued financial support and workplans for the StepSA initiative and the R&V Atlas by 30 June 2013	Finalise contracting for the two additional decision support systems Monitor the implementation of workplans for existing decision support systems by the project teams by 30 September 2013	Monitor the implementation of workplans for existing and new decision support systems by the project teams by 31 December 2013	2 additional systems \ introduced to user community by 31 March 2014, and; StepSA and R&V Atlas maintained by 31 March 2014
Number of learning interventions (seminars, briefs, policy papers) generated	Quarterly	9 learning interventions (seminars, briefs and policy papers) generated by 31 March 2014	Finalise schedule of policy interventions for the financial year by 30 June 2013	Ensure that implementation arrangements are finalized for the full portfolio of policy interventions by 30 September 2013	Monitor the implementation and introduce any corrective action including revision of the schedule of policy interventions by 31 December 2013	9 learning interventions (seminars, briefs and policy papers) generated by 31 March 2014
Number of high level research graduates (Master's PhD students) fully funded or co-funded in designated niche areas (global change and earth system sciences)	Quarterly	200 Master's and PhD students fully funded or co-funded in designated niche areas (global science and earth system sciences) by 31 March 2014	50 Master's and PhD fully funded or co-funded by 30 June 2013	No new Masters of PhD students funded or co-funded.	No new Masters or PhD students funded	Additional 150 Master's and PhD students fully funded or co-funded by 31 March 2014 taking the total for the financial year to 200 students



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio through fully funded or co-funded research initiatives	Quarterly	2 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio by 31 March 2014	Begin negotiations with implementation agencies on proposed knowledge and innovation products to be added to IP portfolio by 30 June 2013	Finalise negotiations with implementation agencies on proposed knowledge and innovation products to be added to IP portfolio by 30 September 2013	Oversee and monitor the implementation as per agreed contracts with implementing agencies by 31 December 2013	2 knowledge and innovation products (patents, patent applications, prototypes, technology demonstrators or packages) added to the IP portfolio by 31 March 2014
Number of scientific and technical papers accepted for publication	Quarterly	55 scientific and technical papers accepted for publication by 31 March 2014	5 scientific and technical papers accepted for publication by 30 June 2013	Additional 5 scientific and technical papers accepted for publication, taking the total for the financial year to 10 papers by 30 September 2013	Additional 30 scientific and technical papers accepted for publication, taking the total for the financial year to 40 papers by 31 December 2013	Additional 15 scientific and technical papers accepted for publication, taking the total for the financial year to 55 papers by 31 March 2014
Number of reports and policy briefings on the innovation system and innovation policy approved by the DST Exco and/or published on the DST website	Quarterly	5 reports and policy briefings approved by the DST Exco and/or published on the DST website by 31 March 2014	Data collection for 2012/13 report on Publicly Funded research, science and innovation commenced by 30 June 2013	Completed verification and validation of data with departments by 30 September 2013	Draft 2012/13 report on Publicly Funded research, science and innovation policy briefing presented to and approved by DST Exco by 31 October 2013	2012/13 report on performance of R&D tax incentive finalised and published on DST website by 31 October 2013

Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of high level research graduates (Master's PhD students) fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs)	Bi-annually	245 Master's and PhD students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs) by 31 March 2014	Finalise 2011/12 R&D survey fieldwork by 30 June 2013	Draft report of the 2011/12 R&D survey and present the report to DST Exco by 30 September 2013	Final 2011/12 R&D survey report published by 31 December 2013	Dissemination of the 2011/12 R&D survey report and drafting of Cabinet Memo on trends in R&D expenditure completed by 31 March 2014
			Commence with fieldwork data collection for 2012 Innovation survey by 30 June 2013	CESTII quarterly report indicating progress with 2012 Innovation survey fieldwork produced by 30 September 2013	Draft report of 2012 Innovation survey produced by 31 December 2013	2012 Innovation survey approved by the DST Exco by 31 March 2014
			MOA for data sourcing on the Technology Balance of Payments concluded with Reserve Bank by 30 June 2013	Database on sourced data for the Technology Balance of Payments (TBP) produced by 30 September 2013	Data sourcing and analysis; Draft analysis report on TBP policy brief compiled by 31 December 2013	Policy brief on Technology Balance of Payments presented to DST Exco and the Minister by 31 March 2014
			215 Master's and PhD students fully funded or co-funded in designated niche areas by 30 June 2013	No new Master's or PhD students funded or co-funded	No new Master's or PhD students funded or co-funded	Additional 30 Master's and PhD students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals and ICTs) by 31 March 2014 taking the total for the financial year to 245 students



Performance Indicator	Reporting period	Annual target	Quarterly targets			
			1 st	2 nd	3 rd	4 th
Number of interns fully funded or co-funded in designated niche areas of design, manufacturing and product development	Quarterly	130 interns fully funded or co-funded in designated niche areas of design, manufacturing and product development by 31 March 2014	100 interns fully funded or co-funded in designated niche areas of design, manufacturing and product development by 30 June 2013	No new interns funded or co-funded	No new interns funded or co-funded	Additional 30 interns fully funded or co-funded in designated niche areas by 31 March 2014 taking total for the full financial year to 130 interns
Number of knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio through fully funded or co-funded research initiatives	Quarterly	15 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) generated by 31 March 2014	Monitoring of signed contracts with implementing agencies and take timeous corrective action by 30 June 2013	Monitoring of signed contracts with implementing agencies and take timeous corrective action by 30 September 2013	5 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio by 31 December 2013	10 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio by 31 March 2014
Number of companies on a register for receiving technology assistance packages (TAPs)	Quarterly	72 companies on a register of companies provided with a TAPs by 31 March 2014	No new additional companies added to the register; leaving 50 companies on a register of companies provided with TAPs from the 2012/13 financial year by 30 June 2013	No new additional companies added to the register; leaving 50 companies on a register of companies provided with TAPs by 30 September 2013	No new additional companies added to the register; leaving 50 companies on a register of companies provided with TAPs by 31 December 2013	Additional 22 companies on a register of companies provided with a TAP; taking the annual target to a total of 72 companies by 31 March 2014
Number of small and medium enterprises provided with technology support	Quarterly	2 300 small and medium enterprises receiving technology support by 31 March 2014	400 small and medium enterprises receiving technology support by 30 June 2013	Further 600 small and medium enterprises receiving technology support by 30 September 2013 taking the total for the financial year to 1 000	Further 650 small and medium enterprises receiving technology support by 31 December 2013 taking the total for the financial year to 1 650	Further 650 small and medium enterprises receiving technology support by 31 March 2014 taking the total to 2 300 for the financial year

Table 17: Expenditure Estimates

SOCIO ECONOMIC PARTNERSHIPS DETAIL BY SUBPROGRAMME							
R thousand	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
		Actual outcome		Budget	Medium-term estimates		
Science and Technology for Economic Impact	899 209	888 272	939 938	1 030 296	1 268 389	1 428 801	1 595 039
Science and Technology for Social Impact	264 910	254 274	293 564	357 351	384 566	407 514	426 336
Science and Technology Investment	10 435	32 196	30 860	35 137	24 646	28 341	29 537
Total	1 174 554	1 174 742	1 264 362	1 423 384	1 677 601	1 864 656	2 050 912
Compensation of employees	21 688	24 696	26 620	33 961	35 676	37 817	39 557
Goods and services	11 180	9 509	10 077	9 049	9 223	10 301	10 340
Total transfer and subsidies	1 141 296	1 140 191	1 227 009	1 380 216	1 632 702	1 816 538	2 001 015
Total payment for capital assets	387	316	656	158	-	-	-
Total	1 174 554	1 174 742	1 264 362	1 423 384	1 677 601	1 864 656	2 050 912



PART C

LINKS TO OTHER PLANS

5. LINKS TO THE LONG-TERM INFRASTRUCTURE AND CAPITAL PLANS

Table 18: Links to the long-term infrastructure and capital plans

No.	Project name	Programme	Municipality	Project description/ type of structure	Outputs	Estimated project cost R	Expenditure to date (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, preserved and catalogued IK data A distributed national IK Management System	45 000 000	37 821 930	2008	2015/16
	Titanium (Ti) Laser-based Additive Manufacturing Plant (Phase 2 of 4)	Programme 5	Tshwane Metro	Ti beneficiation	A functional and fully characterised technology platform	R35 389 202	28 473 000	2012/13	2015/16
	Primary Titanium Pilot Plant	Programme 5	Tshwane Metro	Ti beneficiation	Manufacturing of titanium metal powder, based on locally developed intellectual property	450 000 000	28 968 000	2011/12	2015/16
	Biocomposites Integrated Manufacturing Demonstrator Facility	Programme 5	Nelson Mandela Bay Metropolitan Municipality	Beneficiation of natural fibres and resins.	A facility with the capability to produce representative component for evaluation and testing by industry	49 000 000	6 976 800 (NATFIBIO via TIA)	2012/13	2017/18



No.	Project name	Programme	Municipality	Project description/ type of structure	Outputs	Estimated project cost R	Expenditure to date (if any) R	Project duration	
								Start	Finish
	Zirconium Demonstrator Plan	Programme 5		Extension of New Metals Development Network of the Advanced Metals Initiative	Bench-scale pilot plant for stage gate to scale up.	50 000 000	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	348 551 915	2007/08	2015/16
	Total of new and replacement assets					1 682 350 113	468 291 645		

6. PUBLIC-PRIVATE PARTNERSHIPS

Table 19: Public private partnerships

Name of PPP	Purpose	Outputs	Current value of agreement (R thousand)	Date when agreement expires
iThimba 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 radiotherapy Patients treated for inoperable and aggressive cancers	R200 000	In approval phase



7. DST ENTITIES

Table 20: DST Entities

Name of public entity	Mandate	Current annual budget (R thousand)	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 	R 808 996	2014
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. 	R 223 630	2015
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 science and technology, including indigenous knowledge, and thereby to contribute to the improvement of the quality of lives of all the people of South Africa. 	R 1 476 445	2015

Name of public entity	Mandate	Current annual budget (R thousand)	Date of next evaluation
Technology Innovation Agency (TIA)	TIA was established by the Technology Innovation Act of 2008, 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.	R 521 081	
National Advisory Council on Innovation (NACI)	NACI derives its mandate from the National Advisory Council on Innovation Act (Act No. 55 of 1997). Its core mandate is to advise the Minister of Science and Technology (S&T), and through her, the government of South Africa, on the role and contribution of Innovation in promoting and achieving national objectives.	R 15 503 (DST line function)	
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 grassroots level. 	R 35 237	2015
Academy of science of South Africa (ASSAf)	<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 	R 20 744	
South African National Space Agency (SANSA)	<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 	R 148 908	



ANNEXURE A

*CHANGES TO THE DST
2011-2016 STRATEGIC PLAN*

CHANGES TO THE DST 2011-2016 STRATEGIC PLAN

The Department has not reviewed its 2011-2016 strategic plan due to no major policy shifts and changes in the service delivery environment. Some of the strategic objectives and performance indicators have been rephrased to meet the SMART (Specific, Measurable, Achievable, Relevant, Timebound) principle.

Programme 1 strategic objectives and performance indicators, which were not included in the strategic plan are now included in the 2013/14 annual performance plan. Below are changes made to strategic objectives and performance indicators that are still linked to the DST strategic outcome orientated goals in the strategic plan, to ensure that they meet the SMART principle:

Programme name	Strategic plan objectives	Revised/ new strategic objectives	New/ revised performance indicator
Administration	New strategic objective	To coordinate (identification, formulation and implementation of strategic initiatives) and ensure that the DST and its entities priorities are aligned to the national priorities	<ul style="list-style-type: none"> Percentage alignment of DST planning document Approved DST entities strategic plans and annual performance plans and signed shareholder's compacts Number of DST performance reports approved by DST Exco and signed by the DG Number of DST entities reports submitted to Parliament
	New strategic objective	To facilitate the development of a competent, productive and representative workforce within the Department	<ul style="list-style-type: none"> Vacancy rate reduced a set rate
	New strategic objective	To enable and capacitate the Department through resource allocation and strategic support to achieve its mandate	<ul style="list-style-type: none"> DST ENE Chapter and database submitted to National Treasury
	New strategic objective	To proactively partner with the Department in optimising organisational performance and improving levels of compliance with relevant policies, frameworks and legislative requirements	<ul style="list-style-type: none"> Number of Enterprise Architecture Development Lifecycle steps developed and implemented Number of IT Governance Framework components implemented
	New strategic objective	To proactively position the Department positively both internally and externally to ensure informed employees and citizenry	<ul style="list-style-type: none"> Number of DST communication, marketing and/ or media plans developed for DST programmes to profile the Department and to inform the citizenry approved by the DST Exco Number of Science and technology media coverage monitoring reports approved by DST Exco Number of public participation programmes conducted



Programme name	Strategic plan objectives	Revised/ new strategic objectives	New/ revised performance indicator
Research, Development and Innovation	New strategic objective	To support research development and innovation initiatives in strategic research areas to enhance South Africa's knowledge and skills base	<ul style="list-style-type: none"> Number of technology solutions supported through DST funding provided to institutions and agencies Number of technology solutions utilised Number of investments commercialized that are financially supported by the DST
	New strategic objective	To provide system based leadership and support to optimise the use of technology based solutions	<ul style="list-style-type: none"> Number of guidelines and practice notes to the IPR PFRD Act approved by the Minister and gazette Number of regulations on Astronomy Advantage Area gazette Number of new collaborative partnerships with private sector through signed memorandum of understanding Number of new disclosures received by office of technology transfer at institutions and reported in the IP 7 forms Number of institutions awarded rebates for intellectual property (IP) prosecution and maintenance costs from the IP fund as recommended by the IP fund committee and approved by the Director General
International relations and resources	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 secure foreign STI funds that will stimulate knowledge production, technology transfer, enhanced innovation, and STI human capital development in pursuit of STI based socio-economic development in South Africa	<ul style="list-style-type: none"> Amount (expressed in Rand millions) of foreign STI funds secured knowledge production, technology transfer, enhanced innovation, and STI human development in Africa as agreed with foreign partners
	To increase South African and foreign funds spent on science and technology-based socio-economic development in Africa	To secure South African and foreign funds for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa	<ul style="list-style-type: none"> Amount (expressed in Rand millions) of South African and foreign funds secured for knowledge production, technology transfer, enhanced innovation, and STI human capital development in Africa as agreed with foreign partners

Programme name	Strategic plan objectives	Revised/ new strategic objectives	New/ revised performance indicator
	<p>To increase access to global knowledge and STI networks that will result in international technology transfer and a competent and equitable pool of science, engineering and technology skills to support the NSI</p>		<ul style="list-style-type: none"> The number of foreign participants (representing the links to global knowledge and STI networks) collaborating with South African participants in knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners
	<p>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 science, engineering and technology skills in support of the NSI</p>	<p>To increase the number of South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development in support of the NSI</p>	<ul style="list-style-type: none"> Number of South African post-graduate (Masters, Doctoral and Post-Doctoral) students participating in international knowledge production, technology transfer, enhanced innovation, and STI human capital development as agreed with foreign partners
Human Capital and Knowledge Systems	<p>To build a SET human capital pipeline to ensure increased availability of researchers and innovators for South Africa's global competitiveness</p>	<p>To contribute to the development of a representative, high-level human capital able to pursue locally-relevant, globally competitive research and innovation activities</p>	<ul style="list-style-type: none"> Total number of graduates and students placed in DST-funded work preparation programmes in SETI institutions Total number of postgraduate students (Btech and Honours, Masters and PhD students and postdoctoral fellows) awarded bursaries as reflected in the NRF projects reports
	<p>To ensure availability of appropriate infrastructure for enhancement of RDI competitiveness</p>	<p>To ensure availability of and access to internationally-comparable research and innovation infrastructure in order to generate new knowledge and train new researchers</p>	<ul style="list-style-type: none"> Average amount of bandwidth per SANREN site per annum
	<p>New strategic objective</p>	<p>To support and promote research that develops basic sciences through production of new knowledge and relevant training opportunities</p>	<ul style="list-style-type: none"> Number of ISI-accredited research articles published by NRF-funded researchers as reflected in the NRF project reports Total numbers of researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports
	<p>New strategic objective</p>	<p>To strategically develop priority science areas in which South Africa enjoys a competitive advantage, by promoting internationally-competitive research and training activities and outputs</p>	<ul style="list-style-type: none"> Number of strategy documents approved by the DST Exco Number of indigenous knowledge innovations developed and registered as intellectual property



Programme name	Strategic plan objectives	Revised/ new strategic objectives	New/ revised performance indicator
Socio Economic Partnerships	<p>New strategic objective</p> <p>To demonstrate strategic technology-based interventions for poverty reduction in order to support the creation of sustainable job and wealth opportunities, and contribute to sustainable human settlements and enhanced service delivery in areas of deprivation</p>	<p>To promote public engagement on science, technology and innovation</p> <p>Through knowledge, evidence, and learning, to inform and influence how science and technology can be used to transform rural and socio-economic development, government planning and service delivery, and the building of sustainable human settlements</p>	<ul style="list-style-type: none"> Total number of participants in science awareness and engagement programmes as reflected in the NRF project reports and those of other service providers Number of livelihoods created, sustained or improved Number of knowledge products (case studies, policy briefs, technology briefs) on technology-led opportunities for sustainable livelihoods published Number of knowledge products (case studies, policy briefs, technology briefs) for government planning, service delivery and the building of sustainable human settlements through innovation Number of decision-support interventions introduced and maintained
	<p>To grow and strengthen a portfolio of niche high-potential but neglected science and technology capabilities as well as actively facilitate the exploitation of both existing and new capabilities to support sustainable development priorities and the non-energy green economy ambitions of South Africa</p>	<p>To identify, grow and sustain niche high-potential STI capabilities for sustainable development and the greening of society and the economy</p>	<ul style="list-style-type: none"> Number of high level research graduates (Master's and PhD students) fully funded or co-funded in designated niche areas (global change and earth system sciences) Number of knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio through fully funded or co-funded research initiatives Number of scientific and technical papers accepted for publication
	<p>Contribute to improving government decision making on S&T as productive investments and to promote the private sector R&D activities in order to increase government expenditure on research and development as a percentage of GDP</p>	<p>To enhance understanding and analysis that support improvements in the functioning and performance of the NSI</p>	<ul style="list-style-type: none"> Number of reports and policy briefings on the innovation system and innovation policy approved by DST Exco and/ or published

Programme name	Strategic plan objectives	Revised/ new strategic objectives	New/ revised performance indicator
	<p>Grow and strengthen a portfolio of niche high-potential R&D capabilities that support the development of new industries in advanced manufacturing, chemicals, advanced metals, and ICT</p>	<p>To identify, grow and sustain 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 aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs</p>	<ul style="list-style-type: none"> • Number of interns fully funded or co-funded in R&D of design, manufacturing and product development • Number of knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the IP portfolio through fully funded or co-funded research initiatives • Number of companies on a register receiving TAPs



Below are strategic objectives and performance indicators that were tabled in the 2011-2016 Strategic Plan, and are no longer being measured in the 2013/14 Annual Performance Plan:

Programme name	Strategic objectives	Performance indicators
Research Development and Innovation	<p>Support research, development and innovation initiatives in strategic research areas, namely, space, energy, biosciences and innovation research to enhance our knowledge and skills base</p> <p>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</p> <p>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</p>	<ul style="list-style-type: none"> • Number of undergraduate and postgraduate students funded in space, bioscience and energy related research • Number of publications as a result of R&D-funded initiatives • SANSa fully operational • NIPMO fully operational • Number of feasibility studies conducted toward the establishment of TIA regional offices • Number of new technology-based enterprises supported • Number of candidates trained in IP and technology transfer specialised skills • Number of prototypes developed and patents registered • Number of requests for satellite database honoured • Number of policy briefs and concept documents developed in space, energy, bioscience and technology commercialisation-related fields
Human Capital and Science Platforms	<p>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</p> <p>To promote and develop RDI in indigenous knowledge system for the improved quality of life</p>	<ul style="list-style-type: none"> • Number of teaching and training platforms • Number of flagship projects developed/ supported • Number of research innovation outputs (prototypes and publications produced by NICs) • An integrated bioprospecting platform as the building block for the bioeconomy
Socio Economic Partnerships		<ul style="list-style-type: none"> • Number of households benefitting from technology-based interventions

ACRONYMS

AAA	Astronomy Advantage Area
AISA	Africa Institute of South Africa
APP	Annual Performance Plan
ARC	Agricultural Research Council
ASSAf	Academy of Science of South Africa
BRICS	Brazil, Russia, India, China and South Africa
CEO	Chief Executive Officer
CESTI	Centre for Science Technology and Innovation Indicators
CFO	Chief Financial Officer
CoC	Centre of Competence
CSIR	Council for Scientific and Industrial Research
DG	Director-General
DHET	Department of Higher Education and Training
DST	Department of Science and Technology
EMI	Electro Magnetic Interference
ENE	Estimates for National Expenditure
EPWP	Expanded Public Works Programme
EU	European Union
EXCO	Executive Committee
GDP	Gross Domestic Product
GERD	Gross Expenditure on Research and Development
HRTEM	High Resolution Transmission Electron Microscopy
HSRC	Human Sciences Research Council
HySA	Hydrogen South Africa
ICT	Information Communication Technology



IK	Indigenous Knowledge
IKS	Indigenous Knowledge System
IKSDC	Indigenous Knowledge System Documentation Centre
IP	Intellectual Property
IPAP	Industrial Policy Action Plan
IPR-PFRD Act	Intellectual Property Rights from Publicly Financed Research and Development Act
ISI	Institute for Scientific Information
IT	Information Technology
KZN	KwaZulu Natal
M&E	Monitoring and Evaluation
MTSF	Medium Term Strategic Framework
NASSP	National Astrophysics and Space Science Programme
NDP	National Development Plan
NEP	National Equipment Programme
NIKMAS	National Indigenous Knowledge Management System
NIKSO	National Indigenous Knowledge System Office
NMMU	Nelson Mandela Metropolitan University
NRDS	National Research and Development Strategy
NRF	National Research Foundation
NRS	National Recordal System
NSI	National System of innovation
OECD	Organisation for Economic Cooperation and Development
OTTs	Offices of Technology Transfer
PFMA	Public Finance Management Act
PUDU	Polyurethane Dispensing Units
R&D	Research and Development
RDI	Research Development and Innovation

RIMS	Research Information Management System
S&T	Science and Technology
SA	South Africa
SACNASP	South African Council for Natural Scientific Profession
SANEDI	South African National Energy Development Institute
SANReN	South African National Research Network
SANSA	South Africa Space Agency
SATRIL	South African TB Research and Innovation Institute
SET	Science Engineering and Technology
SETI	Science Engineering and Technology Institutions
SHARP	South African HIV and AIDS Research and Innovation Platform
SKA	Square Kilometre Array
SMEs	Small and medium enterprises
STEMI	Science Technology Engineering Mathematics and Innovation
STEPSA	Spatial Temporal Evidence for Planning South Africa
STI	Science, Technology and Innovation
TAP	Technology Assistance Package
TBP	Technology Balance of Payments
Ti	Titanium
TIA	Technology Innovation Agency
TYIP	Ten Year Innovation Plan
UCT	University of Cape Town
UJ	University of Johannesburg
WMN	Wireless Mesh Network

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