science and technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

Final 2017/18 Second Quarter Performance Report

1 July – 30 September 2017

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LIST OF ABBREVIATIONS

ACCESS	Applied Centre for Climatic and Earth System Science South African
AG	Auditor-General
AISA	Africa Institute of South Africa
AMCOST	African Ministerial Conference on Science and Technology
APP	Annual Performance Plan
ASSAf	Academy of Science of South Africa
AU	African Union
BFG	Bioinformatics and Functional Genomics
CEO	Chief Executive Officer
CESTII	Centre for Science, Technology and Innovation Indicators
CIPC	Companies and Intellectual Property Commission
CRDP	Comprehensive Rural Development Programme
CSIR	Council for Scientific and Industrial Research
CTR	Centre for Translational Research
DBE	Department of Basic Education
DPME	Department of Planning, Monitoring and Evaluation
DST	Department of Science and Technology
DTI	Department of Trade and Industry
ECOCEP	Economic Modelling for Climate Energy Policy
EDCTP	European and Developing Countries Clinical Trials Partnerships
EE&DSM	Energy Efficiency and Demand Side Management
EGP	Eucalyptus Genome Platform
EIAP	Emerging Industries Action Plan
ENE	Estimates of National Expenditure
ERA	Emerging Research Areas
ERM	Enterprise Risk Management

ESASTUP	European South African Science and Technology Advancement Programme
ESOF	EuroScience Open Forum
EU	European Union
Exco	Executive Committee
FACTS	Follow on African Consortium for Tenofovir Studies
FEI	Flourochemicals Expansion Initiative
FP7	Framework Programme – 7
GCSSRP	Global Change, Society and Sustainability Research Programme
GDP	Gross Domestic Product
HCD	Human Capacity Development
HELP	Herschel Extragalactic Legacy Programme
HLPD	High Level Policy Dialogue
HPC	High Performance Computing
HSSIWG	Human and Social Science Infrastructure Working Group
HySA	Hydrogen South Africa
IAA	Internal Audit Activity
IATs	Institute of Advanced Tooling
ICASA	Independent Communications Authority of South Africa
ICR	International Cooperation and Resources
ICSU	International Council for Science
ICT	Information and Communication Technology
ICT4E	Information and Communication Technology of Basic Education
IDEWS	Infectious Diseases Early Warning Systems
IISA	International Institute for Applied Systems Analysis
IK	Indigenous Knowledge
IKS	Indigenous Knowledge Systems
iIKSSA	Indigenous Knowledge Systems of South Africa Trust
IP	Intellectual Property

IR	International Resources
ISA	Information System Architecture
ISI	Institute for Scientific Information
IT	Information Technology
ITEC	International Travel and Education Cooperation
IU	Implementation Unit
MCA	Multilateral Cooperation and Africa
MEA	Membrane Electrode Assembly
MH	Metal Hydride
MoU	Memorandum of Understanding
MPFP	MultiPurpose Fluorination Pilot Plant
MTEF	Medium-Term Expenditure Framework
NACI	National Advisory Council on Innovation
NAM	Non-Aligned Movement
NECSA	South African Nuclear Energy Corporation
NEP	National Equipment Programme
NF	National Facilities
NICIS	National Integrated Cyber Infrastructure System
NIPMO	National Intellectual Property Management Office
NNEP	National Nanotechnology Equipment Programme
NRDS	National Research and Development Strategy
NRF	National Research Foundation
NSI	National System of Innovation
NSW	National Science Week
NT	National Treasury
NWISET	National Women in Science, Engineering and Technology
NYS	National Youth Service
OECD	Organisation for Economic Cooperation and Development
OTT	Office of Technology Transfer
PCT	Patent Cooperation Treaty
PHI	Post-Harvest Innovation

PPGME	Policy, Planning, Governance, Monitoring and Evaluation
PPP	Public Participation Programme
RE	Renewable Energy
R&D	Research and Development
RDI	Research, development and innovation
RD+S	Research, development and support
S&T	Science and Technology
SA-YSSP	Southern African-Young Scientists Summer Program
SACNASP	South African Council for Natural Scientific Profession
SADC	South African Development Community
SAEON	South African Environmental Observation Network
SAMCOST	Southern African Ministerial Conference on Science and Technology
SANSA	South African National Space Agency
SANWATCE	Southern African Network of Water Centres of Excellence
SARChi	South African Research Chairs Initiatives
SARIR	South African Research Infrastructure Roadmap
SASSCAL	Southern African Science Service Centre for Climate Change and Adaptive Land Management
SEP	Socio-Economic innovation Partnership
SETI	Science, Engineering and Technology Innovation
SIF	Sector Innovation Fund
SKA	Square Kilometer Array
SKA/AVN	SKA and African Very Long Baseline Interferometry Network
SKARAB	SKA Reconfigurable Architecture Boards
SLA	Service Level Agreement
STEPSA	Spatial Temporal Evidence for Planning South Africa
STI	Science, Technology and Innovation
STISA	Science, Technology and Innovation for South Africa
TDGs	Technology Development Grants

TIA	Technology Innovation Agency
TIPS	Trade and Industrial Policy Strategy
TISC	Technology And Innovation Support Centre
TLIU	Technology Localization Implementing Unit
TMP	Technology Matchmaking Project
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
WIPO	World Intellectual Property Organisation
WISA	Women in Science Awards
WRC	Water Research Council

Introduction

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

- A responsive, coordinated and efficient National System of Innovation;
- Increased knowledge generation;
- Human capital development;
- Using knowledge for economic development; and
- Knowledge utilisation for inclusive development.

Treasury Regulation 5.3.1 requires the accounting officer to establish procedures for quarterly reporting to the executive authority to facilitate effective performance monitoring, evaluation and corrective action. Procedures for quarterly reporting have been established through the August 2011 National Treasury Guidelines, "Preparation of Quarterly Performance Reports Guidelines", in line with the Presidency's outcomes-based approach. Both the National Treasury and the DST's "Performance Information Policy and Procedure Manual" (PIPPM) require that, where there are deviations between planned and actual performance, reasons for the deviations must be provided.

The second quarter review presents progress made from 1 July to 30 September 2017, including the challenges and issues confronting DST

Programmes in their pursuit of the 2017/18 financial year targets as outlined in the Annual Performance Plan (APP). This review also provides details of the financial transactions of the DST as at 30 September 2017.

The overall progress of performance is based on the three classification categories. The legend keys below explain the overall progress as per DST performance indicators:

Not Achieved	No target due	Achieved

Note that the colour code is referring to the quarterly targets and these exclude the ones, which were not planned for.

- Red – Not achieved that the target has not been achieved within the planned timeframes; major remedial action and urgent interventions are required.

- Green – No target due and no major action is needed since there are no planned targets within the planned timeframes.

- Blue – the quarterly target is achieved within the planned timeframes.

DST SECOND QUARTER PERFORMANCE OVERVIEW

Figure 1 below illustrates the performance of the DST from July to September 2017. During the period under review, the total number of planned output targets was 36. The Department achieved 22 (61%) of the planned output targets and 14 (39%), not achieved.

Figure 1: The overall 2017/18 DST's second quarter performance

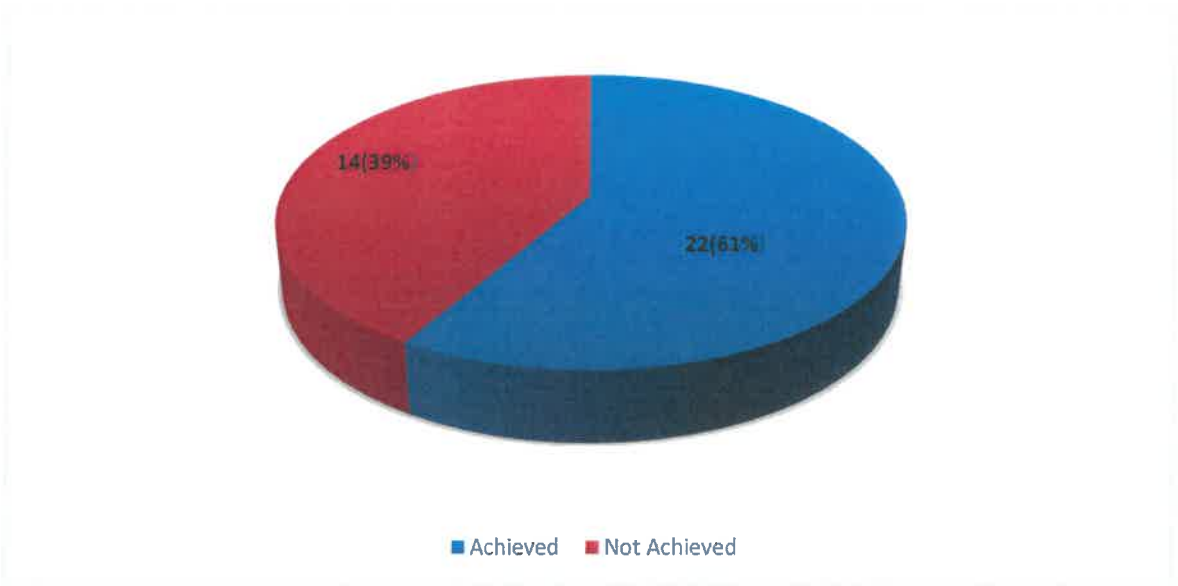
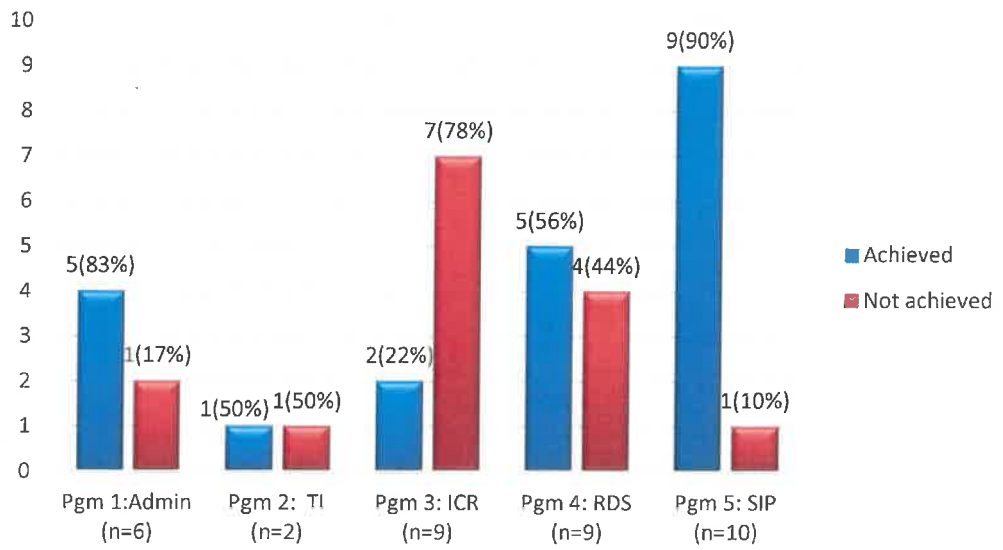


Figure 2 below illustrates the performance of the Department per Programme during the second quarter. The DST planned to achieve a total number of 36 output targets for the 2017/18 financial year. Performance is based on all five programmes.

- Programme 1: achieved 83%.
- Programme 2: achieved 50%.
- Programme 3: achieved 22%.
- Programme 4: achieved 56%.
- Programme 5 achieved 90%.

Figure 2: The DST second quarter performance per Programme



PROGRAMME 1: ADMINISTRATION

Purpose

To provide strategic policy and planning alignment, ensure effective governance, risk management, and monitoring and evaluation (M&E), and provide strategic science communication with stakeholders about the activities of DST and the NSI.

The Programme consists of the following Chief Directorates:

Chief directorates

Programme 1 is organised around two focus areas, namely, administration, and policy and planning functions. The Programme consists of the following components:

a) **The Ministry and Office of the Director-General** support the Minister, Deputy Minister and Director-General by providing professional and executive support. This component is responsible for the development of systems and mechanisms for handling Parliamentary questions and replies,

Cabinet matters, correspondence, submissions and memoranda. It also coordinates activities within the Department to assist in steering the NSI towards the development of a knowledge-intensive economy with higher productivity levels.

b) **Enterprise Risk Management** provides and drives an enabling environment in support the effective and adequate identification, management and oversight of risks across strategic, tactical and operational levels in the Department. This role includes ensuring that countering fraud and/or corruption is made an integral part of strategy, operations and administration in the Department.

c) **Policy, Planning, Governance, Monitoring and Evaluation** supports the DST leadership in steering the NSI by facilitating the coordination of selected cross-cutting issues in the Department, strategic and operational planning, M&E for the Department and its public entities, and governance of the public entities, in order to assist the Department and its entities to contribute to the realisation of departmental and national priorities.

d) **Internal Audit Activity** is a primary assurance tool for improving the Department's governance, risk management and management controls by providing insight and recommendations based on the analysis and assessment of data and business processes.

e) **Human Resources** ensures that the Department is able to (a) provide a professional service through accurate, consistent and best employment practices in all its activities, which are aimed at supporting the achievement of the DST's strategic and operational objectives; (b) attract and retain employees who share the organisational vision; (c) champion change and transition, with a view to being a catalyst in the transition of people and the organisation to embrace and implement change; (d) set performance standards and manage performance against them; (e) promote an environment that supports the personal and career development of all employees so that they can reach their full potential and contribute better to the achievement of the Department's strategic objectives; and (f) instil a culture of service excellence. As part of implementing the step changes in the DST's 2015-2020 Strategic Plan, Human Resources focuses on

capacitating employees through relevant interventions to ensure the required competence. Competence will be measured by how well employees perform their tasks, as well as the cognitive, technical and behavioural traits that they display.

f) **Finance** ensures the effective, efficient and economic use of financial resources in line with financial prescripts, through the development and implementation of financial systems, policies, frameworks and procedures. This includes budget planning and expenditure monitoring, and the management of procurement, acquisition, logistics, assets and financial transactions.

g) **Information Systems and Knowledge Management** is responsible for the delivery of services that support the Department's Strategic Plan and individual units' objectives through the effective use of IT. The component's purpose is to align the IT strategy with the business strategy to ensure that the Department uses its resources optimally.

h) **Science Communication** provides strategic communication support to raise local and international awareness of the objectives and activities of the Department, its entities and the NSI, as well as to ensure effective communication among DST and NSI stakeholders. Its overall focus is to create public awareness and brand the Department as a custodian of developments, benefits and opportunities in publicly funded STI initiatives across the country's science system. In addition, it is important for this chief directorate to ensure that information to the public is accessible. This is done through print, broadcast and online media, speeches, and events, including public participation programmes. The component also supports science engagement programmes by the South African Agency for Science and Technology Advancement (SAASTA) and others, and ensures the alignment of the DST communication strategy with the Government Communication Framework.

i) **Legal Services** is responsible for ensuring that the interests of the Department are protected against any legal risk. The component ensures that the Department complies with relevant legislation and takes a proactive approach to dealing with matters that have the potential to give rise to conflict or legal challenges.

Highlights of the Quarter

The IPS provided support to programmes in revising the DST Strategic Plan, 2015-2020, and developed the process flow for the drafting of the 2018/19 Annual Performance Plan (APP) and revisions to the Medium Term Strategic Framework (MTSF). The first draft APP was submitted to National Treasury, Department of Planning, Monitoring and Evaluation and Auditor-General by 31 August 2017.

The programme continues to provide support to the Economic Sectors, Employment and Infrastructure Development (ESEID) Cluster and the Government's Nine-Point Plan project management team. IPS also coordinated the DST's participation in other government clusters (Social Protection, Community and Human Development. Governance and Administration; and International Cooperation, Trade and Security). During the reporting period, the government's programme of action (POA) report for quarter four was also finalised and submitted.

TABLE 1: PROGRAMME 1 ADMINISTRATION 1

Strategic statement: To coordinate the identification, formulation and implementation of strategic initiatives and ensure that the priorities of the DST and its entities are aligned to national priorities						
Annual target: DST public entities' 2018/19 annual performance plans and CSIR shareholder compacts signed by the Minister and the Chairperson of the board and annual reports approved by the Minister by 31 March 2018						
Performance indicator: DST public entities' annual performance plans and annual reports approved by the Minister and the CSIR shareholder compact signed by the Minister and the chairperson of the board						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	First draft APPs for the DST public entities were submitted to National Treasury (NT) and DPME by 31 August 2017	First draft APPs for the DST public entities were submitted to National Treasury (NT) and Department of Planning, Monitoring and Evaluation (DPME) by 31 August 2017	Achieved	None	None
No target	No target due	Annual reports of the public entities tabled in Parliament by 30 September 2017	Annual reports public entities were tabled in Parliament by 30 September 2017	Achieved		
Strategic statement : To make the DST an employer of choice and recruit and retain appropriately skilled personnel						
Annual target: Vacancy rate capped at to 10% by March 2018						
Performance indicator: Vacancy rate reduced to a set rate						

1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	Status	Reason for variance	Actions taken
Vacancy rate capped at to 10%	The vacancy rate was capped at 10%	Vacancy rate Capped at 10%	Vacancy rate Capped at 10.5%	Not Achieved	Compensation budget cuts from the National Treasury.	Exco took a decision after an analysis of the compensation budget that will be a shortfall and a moratorium was placed on recruitment.
Strategic statement : To develop and maintain good corporate governance systems for the Department and its entities						
Annual target: 1 combined assurance annual report on the status of combined assurance presented to the Risk and Audit Committees by 31 March 2018						
Performance indicator: Combined assurance annual report on the status of combined assurance presented to the Risk and Audit Committees						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	No target	No target due	No target due	None	None
Strategic statement: To provide strategic communication for the DST and its entities through marketing, media and branding initiatives, and the Science Engagement						
Annual target: 24 media articles written to raise the DST's public profile by 31 March 2018						
Performance indicator: Number of media articles written to raise the DST's public profile						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
4 media articles written to raise the	10 media articles were written to raise the	8 media articles written to raise the DST's public profile	Nine media articles were written to raise the DST's public profile	Achieved	There has been increased efforts from within the Media Liaison function to profile DST work and including the entities, and also	Opportunity to publish was afforded

DST's public profile	DST's public profile				subject to opportunity from publishers	
Annual target: 10 public participation programmes held by 31 March 2018						
Performance indicator: Number of public participation programmes held						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
2 public participation programmes held	Four public participation programmes were held during the quarter	2 public participation programmes held	Four public participation programmes were held	Achieved	Two of the events changed in structure and nature to include public engagement	Strive to increase the number of public participation programmes
Strategic statement : To ensure effective and efficient financial and procurement services						
Annual target: Unqualified audit (clean audit) opinion with no financial matters in the audit report						
Performance indicator: Unqualified audit (clean audit) opinion with no financial matters in the audit report						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	Unqualified audit (clean audit) opinion with no financial matters in the audit report	The Department obtained unqualified audit report in the 2016/17 financial year	Achieved	None	None

PROGRAMME 2: TECHNOLOGY INNOVATION

Purpose

To drive strategic research, development and innovation (RDI) in space science and technology, energy, the bioeconomy, and the emerging and converging areas of nanotechnology, robotics, photonics and indigenous knowledge systems (IKS), and to promote the realisation of commercial products, processes and services from these RDI initiatives. In addition, through the implementation of enabling policies and interventions along the entire innovation value chain, to promote the protection and utilisation of IP, technology transfer and technology commercialisation.

The Programme provides policy leadership in the DST's long-term crosscutting RDI initiatives through four Chief Directorates.

Chief directorates

The Programme is made up of four chief directorates and one specialised service delivery unit (SSDU).

Bioinnovation

This component leads the implementation of the national Bio-economy Strategy, approved by Cabinet in 2013, which is intended to ensure that the bioeconomy makes a significant contribution to the South African economy. The strategy focuses on the following:

- Strengthening the research and innovation competencies that form the strategic foundation for the bio-based NSI.

- Developing and/or supporting strategic RDI programmes that provide for new knowledge and innovation outcomes related to the government's priority requirements.

- Coordinating role players across the NSI to ensure that appropriate skills, knowledge and competencies are made available to maximise socio-economic impact.
- Mainstreaming applied IKS-based R&D, inclusive innovation and local manufacturing to support commercialisation models for sustainable livelihoods and improved quality of life.

The chief directorate supports a number of cross-cutting initiatives aimed at achieving these objectives, including an NRF-based capacity development programme in bioinformatics, technology service platforms (which provide expert services to both the public and private sectors), and a public awareness programme. The Department also participates in the Executive Council established in terms of the GMO Act, providing expert advice and decision-support tools.

The component has four directorates managing thematic strategic priorities aligned to the focus areas of the Bioeconomy Strategy, namely, Agriculture, Indigenous Knowledge-Based Technology Innovation, Industry and Environment, and Health Innovation.

Hydrogen and Energy

The chief directorate continues to develop a portfolio of technologies to contribute towards resolving the energy security challenge, to increase local mineral beneficiation, and to facilitate South Africa's transition towards a knowledge-driven economy.

Space Science and Technology

The chief directorate supports the creation of an environment conducive to the implementation of the Space Science and Technology Grand Challenge, the National Space Strategy and SAEOS, as well as addressing the development of space technologies, innovative solutions and human capital to respond to national priorities and boost socio-economic growth.

Innovation Priorities and Instruments

Innovation Priorities and Instruments supports and strengthens the innovation policy package (and related interventions) aimed at creating and sustaining an enabling environment for innovation, technology development, and the commercialisation of publicly funded R&D initiatives. It does this by identifying, developing, creating and supporting policy and institutional structures that facilitate technology development and its progression into national and international markets.

This includes the conceptualisation, piloting, and M&E of innovation policy instruments, such as those centred on the Department's Commercialisation Framework. It also includes supporting the development and implementation of emerging and converging technologies that have the potential to influence and affect social and economic development positively, in areas such as synthetic biology, structural biology, systems biology and functional genomics (collectively comprising the South African Biodesign Initiative), nanotechnology, photonics and robotics.

Highlights of the Quarter

Building a responsive, coordinated and efficient NSI

The DST held the shale gas conference from 31 August to 1 September 2017, with the objective of identifying key SET for its utilisation in South Africa. This will lead to the development of a science action plan that highlights key research topics that require prioritisation.

Sovereign Innovation Fund: The programme is currently leading the process for the establishment of the Sovereign Innovation Fund (SoIF). National Treasury (NT) has set aside R1 billion (one billion Rand) in the 2019/20 financial year, for funding SMMEs and innovation. Numerous discussions have taken place with, amongst others, NT, Department of Small Business Development (DSBD), South African SMME Fund, and the Government Technical Advisory Centre (GTAC). The DSBD and NT also undertook the development of a concept

note for an SoIF. The Inter Ministerial Committee endorsed the concept note, at its meeting of 22 August 2017.

Consequently it has proposed that an umbrella SME Fund be established, which will potentially incorporate the DST's proposed support for innovation, namely, the SoIF, as part of the R1 billion budgetary allocation. The DST has subsequently formally requested GTAC to undertake the development of a comprehensive technical business case for the establishment of the SME Fund, which will evaluate and seek to consolidate both the DST's and the DSBD's concept documents. An early draft of GTAC's document is anticipated at the end of November 2017. A meeting of the respective DGs from NT, DSBD and DST has been scheduled for 23 November 2017.

Public - Private Partnerships: As a lead up to the Innovation Bridge event, activation events were hosted in Cape Town and Johannesburg, where the topic "*Advancing technological innovation through public-private partnership - what is required?*" was debated by panels of NSI representatives. A short video of the Johannesburg event can be viewed on YouTube. Panellists and participants of both events requested that more such consultative events be hosted to ensure greater awareness and understanding of the innovation ecosystem.

Innovation Bridge: The second Innovation Bridge (IB) Technology Showcase and Matchmaking Event, hosted at the Gallagher Convention Centre on 15 September 2017, attracted more than 1000 delegates. Building on the success of the first Innovation Bridge event, held in 2015, this year's event focused on new measures to accelerate local innovation for commercialisation. The event also offered an opportunity for local entrepreneurs to present their innovative technologies to potential investors and commercialisation partners. The IB focuses on technologies developed in publicly funded South African research and development institutions, and by companies receiving government support. IB 2017 included 76 exhibitors with 175 technologies. Potential funders and business partners had the opportunity to evaluate a range of new local innovations on show – from new industrial isotopes technology, construction polymers, and higher-yield wind turbines, to smart water metering systems and

additive manufacturing technology for prosthetics and medical devices. The event also saw the launch of the **Innovation Bridge Portal**, an online website that serves as an online technology innovation market. The event culminated in an Innovation Awards ceremony.

The winners were:

- Best Innovation – Zizon Circumcision Device (Hlomuka Holdings);
- Best Prototype – Lab in a box (Rhodes University);
- Best Exhibit – Agricultural Research Council; Innovation most likely to find markets nationally or internationally – 3D Medical Devices (University of Cape Town), and
- Best innovation with social impact – Zenzeleni community Wifi Network (University of the Western Cape).
- The winners in each category received a trophy and an award of R50 000.

The Commercialisation Framework Initiative (CFI): The CFI serves as an overarching policy guideline for actions to be taken in respect of the commercialisation activities of the DST. The objective is to design a transparent process, methodology and advisory structure for the implementation of the CFI. The framework is intended to provide an objective and standardised decision-making process insofar as investments in projects/programmes are concerned. The CFI was presented to EXCO on 18 September 2017.

As part of the **Nanotechnology Public Engagement Programme**, nanotechnology events were hosted at the University of the Free State and at Mintek. The events, comprising training and science communication workshops, as well as nanotechnology facility tours, were well received by academics / researchers and students.

Increased knowledge generation

The DST, South African Medical Research Council (SAMRC) and Novartis entered into a collaborative agreement that will see Novartis assisting South African scientists through the following activities:

- Establishing a joint research programme in selected communicable and non-communicable diseases from drug discovery through preclinical and clinical development. This builds on the resources and infrastructure investment of both the South African government and Novartis;
- Improving South African patients' access to precision medicines; and
- Building up of the research & development ecosystem in Africa.

This relationship is managed via the Strategic Health and Innovation Partnership.

Knowledge utilisation for economic development

Solar Turtle is an initiative that was started by a DST funded renewable energy postgraduate at Stellenbosch University in 2012 and later exhibited in Cofimvaba during the Ministerial launch of the Tech 4 Red. In partnership with Nedbank, the solar turtle team has provided a 100% renewable energy powered 'mobile bank in a shipping container' that was launched in Mncwasa village (60 km from Umtata – Mbashe municipal area) on 16 September 2017. This cashless, wireless enabled branch is a pilot that seeks to understand the feasibility of switching away from both Telkom and Eskom networks, which are vulnerable (due to cable theft, unscheduled downtime etc.), to improve the financial services provided banks to rural communities. This project is expected to increase the understanding of the barriers associated with penetrating rural areas as well as areas without such networks. The lessons will be used to guide possible roll out in SA and the rest of the continent.

Knowledge utilisation for inclusive development

The commercialisation of new IK-based technologies is essential for the country's socio-economic advancement. After the completion of the Limpopo (Tooseng) agro-processing facility for Moringa project, the Sedikong cooperative from Tooseng community has started negotiations with Future Life (private sector) for joint commercialisation of their products.

South Africa's chairship of the SADC from August 2017 to August 2018 promoted the identification of three major cross–boundary projects. The IK-based Technology Innovation Directorate under the Nutraceuticals Platform funds one of the projects, the Nutri-drink project. The DST hosted a meeting in September 2017 in order to map an SADC innovation programme plan for the implementation of the three projects. One of the key performance areas in space science and technology is the current EOSAT1 satellite development. The implementation of this project is under the South African National Space Agency (SANSA), with Denel –Spaceteq as the main contractor. Seventy seven percent of the critical design review has already been completed. The review will lead to the development of a flight model by 2019/20.

TABLE 2: PROGRAMME 2 – TECHNOLOGY INNOVATION

Strategic statement: To facilitate and resource investments in space science, energy, bioinnovation, nanotechnology, robotics, photonics, IKS, IP management, technology transfer and technology commercialisation						
Annual target: 19 instruments funded in support of knowledge utilisation by 31 March 2018						
Performance indicator: Number of instruments funded in5 support of knowledge utilisation						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	Seven instruments funded in support of knowledge utilisation	Four instruments funded in support of knowledge utilisation	Not Achieved	There was a delay in the payment for the 3 HySA CoCs were the reason	A DG submissions was generated to address the matter
Annual target: 148 knowledge outputs generated by 31 March 2018						
Performance indicator: Number of knowledge outputs generated						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	No target	No target due	No target due	None	None
Annual target: 7 strategic policy directives in designated areas in support of economic sectors by 31 March 2018						
Performance indicator: Number of strategic policy directives in designated areas in support of economic sectors						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	No target	No target due	No target due	None	None

Annual target: 27 regulatory recommendations for decision support by government by 31 March 2018						
Performance indicator: Number of regulatory recommendations for decision support by government						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Six regulatory recommendations for decision support by government	Two regulatory recommendations for decision support by government	Eight regulatory recommendations for decision support by government	12 regulatory recommendations for decision support by government were submitted to the Executive Council of the Department of Agriculture, Forestry and Fisheries	Achieved	No deviation at the end of Quarter 2, as the total target of Quarters 1 and 2 is 12	
Annual target: 2 decision-support interventions maintained by 31 March 2018						
Performance indicator: Number of decision-support interventions developed or maintained						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	No target	No target due	No target due	None	None
Strategic statement: To oversee, monitor and regulate key policy initiatives, including institutions/agencies and support interventions in the key strategic areas of space science, energy, bioinnovation, nanotechnology, robotics, photonics and IKS						
Annual target: 280 new disclosures reported by publicly funded institutions by 31 March 2018						
Performance indicator: Number of new disclosures reported by publicly funded institutions						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
140 new disclosures reported by	108 new disclosures reported by	No target	No target due	No target due	None	None

publicly funded institutions	publicly funded institutions					
Strategic statement: To coordinate and support high-end and skills development in the strategic and emerging S&T areas of space science, energy, bioinnovation, nanotechnology, robotics, photonics, synthetic biology, structural biology, systems biology and functional genomics (collectively the South African Biodesign Initiative), IP management, technology transfer and technology commercialisation						
Annual target: 355 postgraduate students (master's and doctoral) funded in designated areas by 31 March 2018						
Performance indicator: Number of postgraduate students (master's and doctoral) funded in designated areas						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target.	No target due.	No target	No target due	No target due	None	None
Annual target: 240 trainees attending training initiatives in designated areas by 31 March 2018						
Performance indicator: Number of trainees attending training initiatives in designated areas						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target.	No target due	No target	No target due	No target due	None	None
Strategic statement: To support, promote, and advocate for the development and translation of scientific R&D outputs into commercial products, processes and services that will contribute towards economic growth and a better quality of life						
Annual target: 6 knowledge application products funded in designated areas by 31 March 2018						
Performance indicator: Number of knowledge application products funded in designated areas						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target.	No target due for the quarter, however, one knowledge application product was funded	No target	No target due	No target due	None	None

Annual target: 4 commercial outputs in designated areas by 31 March 2018						
Performance indicator: Number of commercial outputs in designated areas						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due for the quarter, however, two commercial outputs in designated areas were reported	No target	No target due	No target due	None	None

PROGRAMME 3: INTERNATIONAL COOPERATION AND RESOURCES

Purpose

To strategically develop, promote and manage international partnerships that strengthen the NSI and enable an exchange of knowledge, capacity and resources between South Africa and its international partners, with a focus on supporting STI capacity building in Africa, and to support South African foreign policy through science diplomacy.

Chief directorates

International Resources works to increase the flow of international funding into South African STI initiatives as well as African regional and continental programmes, through concerted foreign investment promotion efforts, and the fostering of strategic partnerships with partners such as the European Union, as well as foundations and philanthropic organisations and the multinational private sector.

Multilateral Cooperation and Africa advances and facilitates South Africa's participation in bilateral STI cooperation initiatives with other African partners, in African multilateral programmes, especially SADC and AU programmes, and in broader multilateral STI partnerships, with a strategic focus on South-South cooperation.

Overseas Bilateral Cooperation promotes and facilitates South Africa's bilateral STI cooperation with partners in Europe, the Americas, Asia and Australasia, especially for STI HCD, for collaborative research and innovation, and to secure partners' support for joint cooperation with other African partners.

Highlights of the Quarter

During the period under review, the South Africa Japan Universities forum was hosted in Japan to build and strengthen networks for universities that would prepare them for bilateral, trilateral and polylateral research collaborations.

Ongoing joint research cooperation with Japan through the SATREPS programme on the "Establishment of Infectious Diseases Early Warning System (IDEWS) for Southern Africa Incorporating Climate Predictions" has reported good progress in the development and testing of disease and climate models to predict the variability and incidence of malaria and ongoing work to develop similar models for pneumonia and diarrhoea.

The DST signed and Memorandum of Understanding with Chile with the intention to expand relations in the America. Countries in the Americas present different strengths in science and an MoU was signed with Denmark in the area of technology and innovation. The Bi National Commission with Mozambique reported progress on the S&T agreement, with three jointly funded research calls. This resulted in over 20 research projects. There was also progress in the implementation of the SKA/AVN project, in setting up the Astrophysics laboratory complete with 20 personal computers and a two-Antenna Interferometer at the University of Eduardo Mondlane.

TABLE 3: PROGRAMME 3 – INTERNATIONAL COOPERATION AND RESOURCES

Strategic statement: To secure international funds to complement South Africa's national investments in STI, including resources for DST initiatives requiring external investments						
Annual target: R420m in international funds directly invested in research, innovation and STI HCD programmes as well as research infrastructure investments in South Africa as part of cooperation initiatives implemented by the DST by 31 March 2018						
Performance indicator: Amount (expressed in Rand millions) of international funds directly invested in research, innovation and STI HCD programmes as well as research infrastructure investments in South Africa as part of cooperation initiatives implemented by the DST						
1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	Status	Reason for variance	Actions taken
No target.	No target due for the quarter, However R300 600 in international funds directly invested in research, innovation and STI HCD programmes as well as research infrastructure investments in South Africa accounted for as part of cooperation initiatives implemented were reported	R50m in international funds directly invested in research, innovation and STI HCD programmes as well as research infrastructure investments in South Africa as part of cooperation initiatives implemented by the DST	R2 480 472 in international funds directly invested in research, innovation and STI HCD programmes as well as research infrastructure investments in South Africa as part of cooperation initiatives implemented by the DST	Not Achieved	Awaiting evidence from international partners	Engagement of International Partners
Annual target: R250m invested by international partners in their own organisations and initiatives but targeted at cooperation in research, innovation and STI HCD with South African partners as part of cooperation initiatives implemented by the DST by 31 March 2018						

Performance indicator: Amount (expressed in rand million) of funds invested by international partners in their own organisations and initiatives but targeted at cooperation in research, innovation and STI HCD with South African partners as part of cooperation initiatives implemented by the DST						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
R40m invested by international partners in their own organisations and initiatives but targeted at cooperation in research, innovation and STI HCD with South African partners as part of cooperation initiatives implemented by the DST	R31 181501 invested by international partners in their own organisations and initiatives, but targeted at cooperation in research, innovation and STI HCD with South African partners as part of cooperation initiatives implemented	R50m invested by international partners in their own organizations and initiatives but targeted at cooperation in research, innovation and STI HCD with South African partners as part of cooperation initiatives implemented by the DST	R5,468m invested by international partners in their own organisations and initiatives but targeted at cooperation in research, innovation and STI HCD with South African partners as part of cooperation initiatives implemented by the DST	Not Achieved	Awaiting evidence from international partners	Engagement of International Partners
Strategic statement: To access international knowledge, capacities and resources, to enhance South Africa's national STI capabilities, and to contribute to the attainment of the DST's targets for human capital development, especially for international PhD training						
Annual target: 350 South African students participating in international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DST by 31 March 2018						
Performance indicator: Number of South African students accepted into international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DST						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target.	No target due for the quarter, however, four South African	20 South African students participating in international	Four South African students participating in international	Not Achieved	Awaiting evidence from international partners	Engagement of International Partners

	students accepted into international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DST were reported	training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DST	training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DST due			
Annual target: 500 international partner organisations (i.e. legal entities) collaborating with South African partners within the formalised framework of collaborative research, innovation or STI HCD projects counted as part of cooperation initiatives facilitated by the DST by 31 March 2018						
Performance indicator: Number of international partner organisations (i.e. legal entities) collaborating with South African partners within the formalised framework of collaborative research, innovation or STI HCD projects counted as part of cooperation initiatives facilitated by the DST						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
10 international partner organisations (i.e. legal entities) collaborating with South African partners within the formalised framework of collaborative research, innovation or STI HCD projects counted as part of cooperation initiatives facilitated by the DST	112 international partner organisations (i.e. legal entities) collaborating with South African partners within the framework of formalised collaborative research, innovation or STI human capital development projects as part of cooperation initiatives	50 international partner organisations (i.e. legal entities) collaborating with South African partners within the formalised framework of collaborative research, innovation or STI HCD projects counted as part of cooperation initiatives facilitated by the DST	67 international partner organisations (i.e. legal entities) collaborating with South African partners within the formalised framework of collaborative research, innovation or STI HCD projects counted as part of cooperation initiatives facilitated by the DST	Achieved	Evidence from International Partners became available early	None

Annual target: 20 dedicated international technical exchanges to build or reinforce South Africa's capacities in key STI domains specifically referenced in the DST Strategic Plan, undertaken with the support of international partners and facilitated by the DST by 31 March 2018						
Performance indicator: Number of dedicated international technical exchanges such as workshops, seminars or training programmes to reinforce South Africa's capacities in key STI domains specifically referenced in the DST Strategic Plan, undertaken with the support of international partners and facilitated by the DST						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Five (5) dedicated international technical exchanges to build or reinforce South Africa's capacities in key STI domains specifically referenced in the DST Strategic Plan, undertaken with the support of international partners and facilitated by the DST	Nine dedicated international technical exchanges such as workshops, seminars or training programmes to build or reinforce South Africa's capacities in key STI domains specifically referenced in the DST Strategic Plan, undertaken with the support of international partners	5 dedicated international technical exchanges to build or reinforce South Africa's capacities in key STI domains specifically referenced in the DST Strategic Plan, undertaken with the support of international partners and facilitated by the DST	Four dedicated international technical exchanges to build or reinforce South Africa's capacities in key STI domains specifically referenced in the DST Strategic Plan, undertaken with the support of international partners and facilitated by the DST	Not Achieved	Awaiting evidence from international partners	Engagement of International Partners
Strategic statement: To strengthen cooperation in STI in Africa, to build capacities and support initiatives of the SADC and AU, for the advancement of both South Africa and Africa's growth and development agenda						
Annual target: 50 research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DST and at least one other African partner by 31 March 2018						
Performance indicator: Number of research, innovation and STI HCD cooperation projects, co-funded or supported in kind by the DST and at least one other African partner						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
2 research, innovation and	Not reported	No target	No target due However, nine	No target due		

STI HCD cooperation projects co-funded or supported in kind by the DST and at least one other African partner research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DST and at least one other African partner			research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DST and at least one other African partner were done			
Annual target: R80m in international funds directly invested in African regional and continental research, innovation, STI HCD or research infrastructure programmes as a result of DST facilitation by 31 March 2018						
Performance indicator: Amount (expressed in rand millions) of international funds directly invested in African regional and continental research, innovation, STI HCD or research infrastructure programmes as a result of DST facilitation						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target.	No target due.	R5m in international funds directly invested in African regional and continental research, innovation, STI HCD or research infrastructure programmes as a result of DST facilitation	R10,3m in international funds directly invested in African regional and continental research, innovation, STI HCD or research infrastructure programmes as a result of DST facilitation	Achieved	Evidence from International Partners became available early	None
Annual target: 16 AU or SADC STI initiatives, including programmes, projects or governance frameworks, endorsed at AU or SADC ministerial level supported (financially or in kind) by the DST by 31 March 2018						

Performance indicator: Number of AU or SADC STI initiatives, including programmes, projects or governance frameworks, endorsed at AU or SADC ministerial level supported (financially or in kind) by the DST						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
5 AU or SADC STI initiatives, including programmes, projects or governance frameworks, endorsed at AU or SADC ministerial level supported (financially or in kind) by the DST	Three AU or SADC STI initiatives, including programmes, project or governance frameworks, endorsed at AU or SADC ministerial level supported (financially or in kind) by the DST	5 AU or SADC STI initiatives, including programmes, projects or governance frameworks, endorsed at AU or SADC ministerial level supported (financially or in kind) by the DST	One AU or SADC STI initiatives, including programmes, projects or governance frameworks, endorsed at AU or SADC ministerial level supported (financially or in kind) by the DST due	Not Achieved	Awaiting evidence from international partners	Engagement of International Partners
Strategic statement: To maximise South Africa's strategic interests in international cooperation in STI, in support of South Africa's foreign policy objectives, and international trade and investment partnerships, creating a better South Africa, and contributing to a better and safer Africa in a better world						
Annual target: 4 formally recorded decisions made in intergovernmental STI forums, such as multilateral organisations, with a direct bearing on resource allocation to support priorities of government's Programme of Action following specific DST intervention by 31 March 2018						
Performance indicator: Number of formally recorded decisions made in intergovernmental STI forums, such as multilateral organisations, with a direct bearing on resource allocation to support priorities of government's Programme of Action following specific DST intervention						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target.	No target due.	Two formally recorded decisions made in intergovernmental STI forums, such as multilateral organisations, with a direct	One formally recorded decisions made in intergovernmental STI forums, such as multilateral organisations, with a direct	Not Achieved	Awaiting evidence from international partners	Engagement of International Partners

		bearing on resource allocation to support priorities of government's Programme of Action following specific DST intervention	bearing on resource allocation to support priorities of government's Programme of Action following specific DST intervention			
Annual target: 4 leadership positions occupied by South Africa in international STI governance structures relevant to influencing resource allocation to support priorities of government's Programme of Action following specific DST intervention by 31 March 2018						
Performance indicator: Number of leadership positions occupied by South Africa in international STI governance structures relevant to influencing resource allocation to support priorities of government's Programme of Action following specific DST intervention						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target.	No target due.	Two leadership positions occupied by South Africa in international STI governance structures relevant to influencing resource allocation to support priorities of government's Programme of Action following specific DST intervention	One leadership positions occupied by South Africa in international STI governance structures relevant to influencing resource allocation to support priorities of government's Programme of Action following specific DST intervention	Not Achieved	Awaiting evidence from international partners	Engagement of International Partners

PROGRAMME 4: RESEARCH DEVELOPMENT AND SUPPORT

Purpose

To provide an enabling environment for research and knowledge production that promotes the strategic development of basic sciences and priority science areas, through science promotion, HCD, and the provision of research infrastructure and relevant research support, in pursuit of South Africa's transition to a knowledge economy.

Chief directorates

Human Capital and Science Promotion formulates and implements policies and strategies that address the availability of human capital for STI, and that provide fundamental support for research activities. The chief directorate provides strategic direction and support to institutions mandated to develop human capital and increase knowledge production, as well as interfacing with relevant stakeholders in this regard. In addition, the chief directorate is responsible for the development of a society that is scientifically literate and critically engaged with science through public engagement in STI and the enhancement of the youth's access to STI.

Basic Sciences and Infrastructure facilitates the strategic implementation of research and innovation equipment and facilities to promote knowledge production in areas of national priority and to sustain R&D-led innovation.

The chief directorate also promotes the development and strengthening of basic or foundational sciences, such as physics, chemistry, mathematics, computer science, biological and life sciences, geographic and geological sciences, and the human and social sciences.

Science Missions promotes the development of research, the production of scientific knowledge, and human capital in science areas in which South Africa enjoys a geographic advantage. These areas include the dynamics of climate

change and its impact on Earth systems, Antarctic and marine research, the palaeosciences, and indigenous knowledge systems (IKS).

Highlights of the Quarter

Building a responsive, coordinated, and efficient NSI

The Department hosted the 2017 IKS EXPO in partnership with the Mpumalanga Provincial Department from 26-28 September 2017, with the theme "Indigenous Knowledge: Protecting it for future generations". The IKS EXPO culminated in five learners, schools in the province, being awarded scholarships to study towards a Bachelor's Degree in IKS (B.IKS). More than 450 grade 10 and 11 learners, and 2 800 community members, delegates and exhibitors participated in the Expo.

Following a number of meetings and presentations to both the Portfolio Committee on Science and Technology, the IKS Bill was transposed into a legal draft document and presented to the Committee. On 13 September 2017, the Committee adopted the IK Bill. In July the Minister launched the South-South Framework for Scientific and Technical Cooperation in the South and Tropical Atlantic and Southern Oceans jointly with Brazil. The Minister also signed the Belem Statement with the European Union and Brazil, to boost research and innovation cooperation in order to better understand marine ecosystems and climate. The three partners launched the South Atlantic Research and Innovation Flagship Initiative and signed a joint Statement on Atlantic Ocean Research and Innovation Cooperation.

Increasing knowledge generation

On 27 July 2017 the South African Basic Sciences Platform (SABSPLAT) – consisting of representatives of learned societies (Mathematics, Physics, Chemistry, Geological Sciences, Computer Science and the Biological Sciences); ASSAf; NRF – was established to implement the Basic Sciences Development and Support Framework (BSDSF). The immediate task of the

platform will be to develop an action plan for the operationalisation of the BSDSF.

Submissions for reconfiguring and restructuring the National Institute for Theoretical Physics (NITheP) into a National Centre for Theoretical and Computational Sciences were discussed and the Minister agreed that Programme 4 could proceed with engaging relevant stakeholders.

In conjunction with ASSAf, operational structures were developed to manage and drive the process of developing a national policy framework for Open Science. A matrix providing a comparative analysis of the structure of selected international science academies was discussed with the ASSAf Council during the ASSAf Strategic Planning meeting at the DST on 25 July 2017.

The engagement with the ASSAf Council focused on the long-term strategic positioning of ASSAf in the NSI. The discussion concentrated on how to increase the scale and scope of ASSAf's operations in order to give ASSAf greater presence in the NSI. The discussion relating to the strategic repositioning of ASSAf was directly connected to the funding challenges that ASSAf has been experiencing.

Human Capital Development

The Programme hosted two successful national events, namely the Women in Science Awards (WISA) on 17 August, and the National Science Week (NSW) on 5 to 9 August. The WISA gala dinner was followed by a 'Morning Live' TV broadcast that featured some of the winners and the Minister. Both WISA and the NSW attracted significant public and media interest. In addition, a Centre of Excellence Directors' Forum was held from 31 August to 1 September 2017. The Forum included stakeholders from the universities, government, industry and civil society to discuss the triumvirate role of people, research and engagement with society in knowledge advancement.

Astronomy and the SKA

Science ministers, deputy ministers and representatives of the nine Square Kilometre Array (SKA) African Partner Countries concluded the Fourth Ministerial Meeting on the SKA in Accra, Ghana, on 24 August by signing a memorandum of understanding on the building of the radio astronomy capabilities on the continent. The Presidential Launch of the Ghana Radio Astronomy Observatory followed the Ministerial Meeting on the same day. Ghana is the first partner country of the African Very Large Baseline Interferometer (VLBI) Network (AVN) to complete the conversion of a communications antenna into a functioning radio telescope.

The third meeting of the BRICS Astronomy Working Group and the associated BRICS Astronomy Workshop held in Pune, India, on 21-23 September 2017. Senior officials and representatives of the respective Ministries for science and technology in Brazil (by video conference), Russia, India, and South Africa attended the meeting. The meeting noted the successful conclusion of the workshop on Astronomy Infrastructure and Instrumentation held the previous two days at the Inter-University Centre for Astronomy and Astrophysics and expressed its deep appreciation to the centre for successfully hosting the workshop.

TABLE 4: PROGRAMME 4 – RESEARCH DEVELOPMENT AND SUPPORT

Strategic statement: To contribute to the development of representative, high-level human capital able to pursue locally relevant, globally competitive research and innovation activities						
Annual target: No fewer than 3 100 PhD students awarded bursaries through Programme 4 funds as reflected in the reports from the NRF and relevant entities by 31 March 2018						
Performance indicator: Total number of PhD students awarded bursaries annually as reflected in the reports from the NRF and relevant entities						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No fewer than 1 568 PhD students awarded bursaries through Programme 4 funds	2 166 PhD students awarded bursaries through Programme 4 funds	No fewer than 2 352 PhD students awarded bursaries through Programme 4 funds	No fewer than 3 065 PhD students awarded bursaries through Programme 4 funds	Achieved	Target overachieved by 30% (714 students) because the bursaries were over allocated due to large number of quality applicants	The NRF will be advised to manage allocations more prudently
Annual target: No fewer than 10 800 pipeline postgraduate students awarded bursaries through Programme 4 funds as reflected in the reports from the NRF and relevant entities by 31 March 2018						
Performance indicator: Total number of pipeline postgraduate students awarded bursaries annually as reflected in the reports from the NRF and relevant entities						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No fewer than 5 400 pipeline postgraduate students (BTech and honours, and master's students) awarded bursaries from Programme 4 funds	4 490 pipeline postgraduate students (BTech and honours and master's students) awarded bursaries from Programme 4 funds	No fewer than 8 100 pipeline postgraduate students (BTech and honours, and master's students) awarded bursaries from	No fewer than 7 955 pipeline postgraduate students (BTech and honours, and master's students) awarded bursaries from	Not Achieved	Target under-achieved by 1.7% (142 students), which is an immaterial deviation because the quarterly performance cannot be predicted or managed within closer margins because it depends on the pool of applicants, which cannot be perfectly predicted	The NRF will be advised to prioritise the awarding of pipeline students than PhDs

		Programme 4 funds	Programme 4 funds			
Annual target: 800 graduates and students placed in DST-funded work preparation programmes in SETI institutions by 31 March 2018						
Performance indicator: Total number of graduates and students placed in DST-funded work preparation programmes in SETI institutions						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
533 graduates and students placed in DST-funded work preparation programmes in SETI institutions	708 graduates and students placed in DST-funded work preparation programmes in SETI institutions	600 graduates and students placed in DST-funded work preparation programmes in SETI institutions	747 graduates and students placed in DST-funded work preparation programmes in SETI institutions	Achieved	The overachievement of 108 is because most positions to workplace preparation programmes were allocated at the beginning of the financial year.	None
Strategic statement: To ensure availability of and access to internationally comparable research and innovation infrastructure in order to generate new knowledge and train new researchers						
Annual target: 30 research infrastructure grants awarded as per award letters by 31 March 2018						
Performance indicator: Number of research infrastructure grants awarded per award letters annually						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	Contracting with SARIR hosting entities finalised by 30 September	No contracts signed as yet with the host institutions for SARIR projects, however, eight grants have been awarded during this reporting period	Not Achieved	The contracting with host institutions for SARIR projects could not be finalised in the second quarter due to delays in the revision of the proposals for the SARIR projects earmarked for implementation in 2017/18.	The revision of the proposals will be fast tracked.

Annual target: 3 200 Gbps total available broadband capacity provided by SANReN by 31 March 2018						
Performance indicator: Total available broadband capacity provided by SANReN per annum						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	New links and upgrade plan finalised by 30 September 2017	The new links and upgrade plans were not finalised	Not Achieved	There is a delay in the technical evaluation tender process to upgrade SANReN equipment at the endpoint of the fibres	The CSIR executive has escalated the delay in the tender process for resolution.
Strategic statement: To support and promote research that develops basic sciences through the production of new knowledge and relevant training opportunities						
Annual target: No fewer than 4 500 researchers awarded research grants through NRF-managed programmes as reflected by the NRF project reports by 31 March 2018						
Performance indicator: Total number of researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No fewer than 2 270 researchers awarded research grants through NRF-managed programmes	2 473 researchers awarded research grants through NRF-managed programmes	No fewer than 3 404 researchers awarded research grants through NRF-managed programmes	No fewer than 3 863 researchers awarded research grants through NRF-managed programmes	Achieved	The overachievement of 459 is due to more research awards made in this quarter. Moreover, the quarterly performance cannot be predicted or managed within closer margins because it depends on the pool of applicants, and the grant values, which cannot be perfectly predicted	None
Annual target: No fewer than 7 000 research articles published by NRF-funded researchers and cited in the Thomson Reuters Web of Science Citation Database as reflected in the NRF project reports by 31 March 2018						
Performance indicator: Number of research articles published by NRF-funded researchers and cited in the Thomson Reuters Web of Science Citation Database as reflected in the NRF project reports						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	To be reported in quarter 4	No target	No target due	No target due	None	None

Strategic statement: To strategically develop priority science areas in which South Africa enjoys a competitive advantage, by promoting internationally competitive research and training activities and outputs						
Annual target: 64-antenna commissioned for a single polarisation array by 31 March 2018						
Performance indicator: Number of antennas commissioned for a single polarisation array						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
SKA SA Project Director approved baseline plan finalised by 30 June 2017	The baseline plan approved by June 2017	SKA SA Project approve progress report with reference to baseline plan provided by 30 September 2017	Progress report approved by SKA SA by 30 September 2017 with reference to the baseline plan	Achieved	None	None
Annual target: A climate change research network formalised in South Africa through a memorandum of understanding by 31 March 2018 (The report will indicate, at the time of reporting, the state of climate change research networks established through MoUs)						
Performance indicator: A climate change research network in place						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Generic draft MoU approved by DDG by 30 June 2017	An MoU template is being negotiated and is to be finalised and submitted by end of July 2017	Parties to MoU identified by 30 September 2017	No parties to MoU were identified by the reporting period. However, a template has been successfully negotiated with ACCESS. It is being finalized and will be submitted by October 2017. The template will be accompanied	Not Achieved	Delays in submitting the MOU template as well as a list of parties to ACCESS membership and research collaboration resulted from 1) long negotiations amongst the ACCESS community to agree on standard templates for ACCESS membership and MOUs/ collaborative agreements, and 2) the Acting ACCESS Director being on leave for an extended period.	There is an agreement with the ACCESS management to submit outstanding documents by October 2017

			by a list of parties that have signed up with ACCESS.			
Annual target: A plan for compiling the second biennial report on the state of climate change S&T in South Africa approved by Exco by 31 March 2018						
Performance indicator: Number of biennial reports on the state of climate change S&T in South Africa submitted to Cabinet						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
No target	No target due	No target	No target due	No target due	None	None
Strategic statement: To promote public engagement on science, technology and innovation						
Annual target: Approx. 2 million participants (learners and members of the public) in science awareness and engagement programmes annually as reflected in the project reports of the NRF and other service providers by 31 March 2018						
Performance indicator: Approximate number of participants in science awareness and engagement programmes annually as reflected in the project reports of the NRF and other service providers						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Grant funding awarded to organisations implementing the initiatives by 30 June 2017	Grants awarded to 93 and 13 organisers of National Science Week and science festivals respectively	National Science Week was held by 30 September 2017	National Science Week was held by 30 September 2017	Achieved	None	None

PROGRAMME 5: SOCIO-ECONOMIC INNOVATION PARTNERSHIPS

Purpose

To enhance the growth and development priorities of government through targeted S&T-based innovation interventions and the development of strategic partnerships with other government departments, industry, research institutions and communities.

This programme has the following four Chief Directorates:

Chief directorates

Technology Localisation, Beneficiation and Advanced Manufacturing funds technology and innovation development programmes to advance 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 medium and 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 benefits include the development of advanced technologies and industries, improved government service delivery, improved productivity and competitiveness, and technology transfer and support to SMEs and manufacturing firms in the supply chains of large-scale public procurement programmes.

Sector Innovation and Green Economy provides policy, strategy and direction-setting support for the R&D-led growth of strategic sectors of the economy and to enhance S&T capacity to support a transition to a green economy. The chief directorate does this through the following:

- Facilitating the implementation of high-impact S&T interventions.

- Identifying and initiating S&T programmes that support the growth of the environmental technologies and services sector in South Africa.
- Facilitating policy and strategy development on R&D interventions that support the growth of the ICT sector (excluding the ICT retail sector).
- Providing innovation policy and planning support to economic actors in priority economic sectors and provincial and local governments.

Innovation for Inclusive Development supports the experimentation of S&T-based innovations for tackling unemployment, poverty and inequality through the creation of sustainable job and wealth opportunities, building sustainable human settlements, and enhancing the delivery of basic services. The component focuses on supporting the widespread adoption and use of promising S&T-based innovation by supporting the demonstration of promising innovative technologies that do not yet have widespread application, but are seen as having the potential to achieve government's broad development objectives. In its interventions, the component prioritises the generation of practical knowledge and insights to support evidence-based policy and decision-making, introducing decision-support tools to enhance service delivery, and building capacity in relevant state institutions and communities. This Innovation for Inclusive Development portfolio also includes a focus on innovation to strengthen and advance local economic development through building and enhancing local STI capabilities and integrating innovation in catalysing local industries, clusters and value-chains by exploiting technology and innovation for priority sectors, e.g. agriculture, agroprocessing, aquaculture and fisheries.

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 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 the national S&T expenditure tables, and the implementation of section 11D of the Income Tax Act, 1962, to promote private-sector R&D investment.

Highlights of the Quarter

Mining research and development (R&D) programme-

Industry has committed funding to the value of R33, 6 million for the 2018 calendar year.

USING KNOWLEDGE FOR ECONOMIC DEVELOPMNT

Titanium metal powder

Following previous successful runs and some optimization (i.e. introducing an online measuring system to the entire facility), the titanium pilot plant was re-commissioned. The pilot plant was successfully operated for two weeks (in August and September) at a slow powder production rate (~ 500g/hr) to determine its operational efficiency and robustness. Approximately 8, 58kg of titanium powder was produced. Detailed powder characterization activities are ongoing. A plan to increase the powder production rate is in place, running in parallel with powder characterization activities.

Additional staff members with specialised skills and experience in design, welding, manufacturing, etc. were appointed to assist in accelerating pilot plant delivery, including the new head of the pilot plant, Dr Shahed Fazluddin.

The production of Ti6Al4V spherical powders is being investigated by deploying five different metallurgical processes. To date, all five processes (cast billet (CB), free forming (FF), press and sinter (P&S), homogenization (HP) and mechanical alloying (MA)) have proven to be successful and are being optimised to establish their capability to produce Ti6Al4V powders that match or exceed global industry standards with regard to composition. The CB process has demonstrated the ability to produce a single 10kg batch of Ti6Al4V powder and preliminary techno-economic studies showed that this is a strong business opportunity for South Africa. The CSIR is exploring opportunities to establish an industrial facility to scale up these technologies for commercial purposes. The powders produced through the CB, FF and PS processes are already being tested in the additive manufacturing (AM) of components on the

National Laser Centre's (NLC) laser-engineered net-shaping (LENS) and POC11 systems.

Experiential Training Programme

The primary objective of the Experiential Training Programme (ETP) is to increase the graduation rate of Science, Engineering and Technology Students (SET) by creating a platform for the students to do their experiential training (practical 1 and practical 2 level training), which is a prerequisite for graduation. The secondary objective of the ETP is to enhance the employability of these students upon completing the internship.

Table: ETP impact since inception

Cycle	No. of interns enrolled	Number of interns completed	Number of interns graduated (National Diplomas)	Number of interns employed	Number of interns absorbed by company	Number of interns absorbed by industry
2014//15	101	72	70	41	30	11
2015/16	108	95	95	37	24	13
2016/17	116	107	104	36	25	11
TOTAL	325	274	269	114	79	35

Some highlights of the ETP since inception:

- 325 students have enrolled into ETP
- 274 interns completed
- 269 interns obtained their national Diplomas
- 114 interns were employed
- The majority of the interns (79) were absorbed by the hosting companies, whereas 35 were employed by industry

Firm Technology Assistant Package

Enterprise and Supplier Development division of General Electric (GE) has signed a contract with the TLIU for the supplier development activity. This first contract is valued at R3.8 million for a one (1) year renewable possibility at the end of the first contract.

This contract is in addition to the quantum of the investment amounting to R5 million that GE has committed for the nine suppliers. Most of the suppliers identified are small black owned.

Technology Station Programme

Glen Addendorf Jewellery (Start-up)

The Durban University of Technology has assisted the above-mentioned start-up with design, drawings of components, composite manufacture and CNC router ring size. The Start-up has expanded its expanded range of bespoke jewellery to include a full range of composite rings and bracelets. Since this is a production item, the start-up has been able to employ one staff member to assist with the demand. This started as an experimental design and material selection. The possibility of a complete range of men's bracelet and accessories is viable.

Montez Quality Foods (Owner is a person with disability)

The Cape Peninsula University of Technology (CPUT) Agri-food Technology Station (ATS) entered into an agreement with the owner who is a person with disability to use the facility for producing puffed pork skin products for the snack market. The owner, with the help of the angel investor, managed to employ three people for production. The production was done mainly at ATS CPUT pilot plant. The business is becoming self-sustainable with additional distributions, including the Rondebosch Spar Picardi Rebel Liquor store.

University Graduates

The Downstream Chemical Technology Station (DCTS) at Nelson Mandela University (NMU), in collaboration with industry, developed a National Diploma in Chemical Process Technology. The first group of 14 students graduated in 2016. The course is currently the only one of its kind in South Africa. The curriculum has been designed around a comprehensive competency profile for a chemical process. There are currently 17 first-year students, 16 second-year students and 30 third-year students participating in this programme. Total enrolment currently stands at 63 students. Support bursaries and sponsorships will be from the following industry partners in 2017 AECI, BASF, Umicore, Heraeus, Fuchsoil and Chieta.

Sasol Electrochemical Oxidation (NMU)

The NMU uses electrochemical oxidation instead of air oxidation to reduce corrosion on the utilities. Research and Development (R&D) for the process has led to the design and construction of a rig, to simulate the process plant currently used by Sasol. The rig was fitted with electrochemical cell to provide current for the oxidation of V^{4+} to V^{5+} and the project enhances research and development of the petro-chemical industry.

Advanced Manufacturing

In the period under review, there were no active contracts under the AMT portfolio as approval processes for CFCP II, CPAM II and Aeroswift III were being concluded. The only active programme was the Titanium machining. However, the Aeroswift has successfully completed phase 2. Interactions and preparatory work around the commercialisation of the technology are underway, with the Aeroswift project being subjected to a commercialisation assessment by an independent panel as part of a pilot initiative of the DST to formalise the commercialisation protocol framework for all DST-funded initiatives. The Aeroswift was also profiled on the popular Sunday Current affairs Carte Blanche, receiving positive responses from the NSI community. Currently, preparations are underway to implement phase three of the Aeroswift project, over a period of three years. In addition, the industry partner

participating in the Aeroswift project is fine-tuning the commercialisation plan. Both these activities are expected to be finalised by the end of the third quarter.

RURAL INNOVATION ASSESSMENT TOOL (RIAT) SEMINAR

On 30 and 31 August 2017, the Technology for Sustainable Livelihoods and the Human Sciences Research Council (HSRC) brought together over 70 Local Economic Development (LED) officials from selected rural municipalities and rural-based universities under the banner of *Owning tools for local innovation assessments: Benefits for local municipalities*. During the current phase of transferring the RIAT (developed by the HSRC) to municipalities and universities the seminar provided a platform for RIAT, participants to share their experiences in utilising the tool set, which enables users to surface rural innovations, envision a prosperous future for a local economy, and identity interventions that have the potential to be high impact catalysts. This was a valuable opportunity to continue the conversation on how to strengthen relations between municipalities and universities in relation to LED. One of the important outcomes of the seminar was an agreement to establish a Community of Practice involving all RIAT participants, in order to continue expanding the gains of RIAT in those municipalities.

1) INTERROGATING AGRICULTURAL INNOVATION SYSTEMS FROM SMALL FARMERS' PERSPECTIVES SEMINAR

2) The SL Directorate hosted an expert from the Science and Technology Policy Research Unit (SPRU) and the School of Business, Management and Economics at the University of Sussex, Dr Matias Ramirez. Dr Ramirez's lecture, delivered at a seminar on 19 September 2017, discussed questions of knowledge transfer and inclusion of small-sized (or smallholder) agricultural producers in agrifood clusters in developing economic clusters. Dr Ramirez presented a typology of inclusion built around concepts of bonding, bridging, and network governance that helps to explain diverse patterns of inclusion, which have important implications for small-scale agricultural producers –

based on examples from agricultural clusters in Peru, the Colombia and the Chile. This was an opportunity for lecturers, researchers and students of agriculture, rural development and innovation from universities and science councils, to draw lessons from the methodology presented by Dr Ramirez. This also presented an opportunity to explore future relations in order to continue the knowledge exchange.

THE 1ST SOUTH AFRICAN DEEP LEARNING INDABA

Together with Google, Wits, Standard Bank, ABSA, IBM etc., the Department of Science and Technology (DST) co-funded the 1st South African Deep Learning Indaba. The event was held from 11-15 September 2017. The Deep Learning Indaba has two principal aims: to increase African participation and contribution to advances in artificial intelligence and machine learning, and to address issues of diversity in these fields of science. The CSIR formed a partnership with several South African researchers at various universities and Google, to organise a first South African Deep Learning Indaba, which included a series of master classes on deep learning and machine learning for South African researchers and technologists. Given the increasing focus on machine learning, the aim of this Indaba is to stimulate the participation of South Africans within the research and innovation landscape surrounding deep learning and machine learning. The DST supported the participation of 20 MSc and PhD students at the event. The aim is to make this an annual event.

TABLE 5: PROGRAMME 5 – SOCIO-ECONOMIC INNOVATION PARTNERSHIPS

Strategic statement: Through knowledge, evidence and learning, inform and influence how science and technology can be used to achieve inclusive development						
Annual target : 6 knowledge products on innovation for inclusive development published by 31 March 2018						
Performance indicator: Number of knowledge products on innovation for inclusive development published						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Through consultation and review, identify the topics and format of the six (6) new knowledge products by 31 June 2017	Eight policy brief topics were identified for production in 2017/18	First draft of the six identified policy briefs on innovation for inclusive development developed by 30 September 2017	First draft of the six identified policy briefs on innovation for inclusive development developed	Achieved	None	None
Annual target : 8 decision-support systems introduced, maintained and improved by 31 March 2018						
Performance indicator: Number of decision-support interventions introduced and maintained						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**

Monitor the implementation of the work plans for the 7 existing decision-support systems and identify one additional decision-support system by 30 June 2017	Workplans of nine decision support tools monitored	Monitor the implementation of the work plans for the 7 existing decision support systems and approval finalised for the one additional decision support system by 30 September	Nine existing decision support systems work plans were monitored	Achieved		
Annual target: 9 learning interventions (seminars) generated 31 March 2018						
Performance indicator: Number of learning interventions (seminars, briefs, policy papers generated)						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Conclusion of contract for coordination of the learning interventions by 30 June 2017	Contract concluded with HSRC	Two learning interventions	Five learning interventions were generated	Achieved	The seminar on interrogating agricultural innovation systems was not planned but organised as a result of expert (who was attending the TIPC meeting) being available. The annual LED meeting was not planned but an opportunity for an engagement came along when an invitation was received from the Department of Cooperative Governance. The Point of Use seminar was hosted in response with the topical issue of water service delivery.	None
Strategic statement: To identify, grow and sustain niche high-potential STI capabilities for sustainable development and the greening of society and the economy						

Annual target: 90 honours, master's and doctoral students fully funded or co-funded in designated niche areas that support the green economy and sustainable development by 31 March 2018						
Performance indicator: Number of honours, master's and doctoral students fully funded or co-funded in designated niche areas						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Update and ongoing monitoring of students from the following initiatives by 30 June 2017: • Waste RDI Roadmap • Water RDI Roadmap • Sector Innovation Fund • Industrial Innovation Partnerships	Ongoing monitoring of existing programmes indicates a total of 99 students currently funded or co-funded by the DST	Ongoing monitoring of the initiatives was done by 31 September 2017	Ongoing monitoring of the initiatives was done by 31 September 2017	Achieved	None	None
Annual target: 4 knowledge and innovation products (patents, prototypes, technology demonstrators and technology transfer packages) added to the IP portfolio through fully funded or co-funded research by 31 March 2018						
Performance indicator: 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						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Interactions with various supported initiatives to	Total of six IP products	Monitoring of progress against 2	Monitoring of progress against	Achieved	None	None

define two new innovation products by 30 June 2017	identified as potential additions to the IP portfolio	innovation products by 30 September 2017.	2 innovation products was done in the first quarter. The target was achieved in first quarter.			
Strategic statement: To identify, grow and sustain niche high-potential STI capabilities that- • **improve the competitiveness of existing industries with growth potential in aerospace, advanced manufacturing, chemicals, advanced metals, mining, ICTs, and sector innovation funds; and** • **facilitate the development of R&D-led new targeted industries**						
Annual target: 288 master's and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs and SIFs) by 31 March 2018						
Performance indicator: Number of high-level research graduates (master's and doctoral students) fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs and sector innovation funds (SIFs))						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
248 master's and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs and SIFs)	264 master's and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced	No target	No target due	No target due	None	None

	metals, ICTs and SIFs)					
Annual target: 100 interns fully funded or co-funded in R&D related to design, manufacturing and product development by 31 March 2018						
Performance indicator: Number of interns fully funded or co-funded in R&D related to design, manufacturing and product development						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
100 interns fully funded or co-funded in R&D related to design, manufacturing and product development	128 interns fully funded or co-funded in R&D related to design, manufacturing and product development	No target	No target due	No target due	None	None
Annual target: 17 knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the innovation product portfolio by 31 March 2018						
Performance indicator: Number of knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the innovation product portfolio through fully funded or co-funded research initiatives						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Begin negotiations with implementation agencies on proposed knowledge and innovation products to be added to the innovation product portfolio by 30 June 2017	Negotiations and discussions with implementation agencies identified five potential IP products to be included in the IP portfolio	Finalised negotiations with implementing agency for One Knowledge and innovation products to be added to the innovation product portfolio by 30 September 2017	Finalised negotiations with implementing agency for one Knowledge and innovation products. 1. Gas Hydrate technology for constructed and	Achieved	None	None

			experiments being performed (technology demonstrator).			
Annual target: 6 instruments funded in support of increased localisation, competitiveness and R&D-led industry development by 31 March 2018						
Performance indicator: Number of instruments funded in support of increased localisation, competitiveness and R&D-led industry development in aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Six instruments funded in support of increased localisation, competitiveness and R&D-led industry development in aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs	Six instruments were funded in support of increased localisation, competitiveness and R&D-led industry development in aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs	Six instruments were funded in support of increased localisation, competitiveness and R&D-led industry development in aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs	Six instruments were funded in support of increased localisation, competitiveness and R&D-led industry development in aerospace, advanced manufacturing, chemicals, mining, advanced metals and ICTs. The target was achieved in first quarter.	Achieved	None	None
Strategic statement: To strengthen provincial and rural innovation and production systems through analysis and catalytic interventions						
Annual target: 2 innovation-support interventions funded or co-funded that strengthen provincial or rural innovation systems by 31 March 2018						
Performance indicator: Number of innovation-support interventions funded or co-funded that strengthen provincial or rural innovation systems						

1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	Status	Reason for variance	Actions taken
Through consultation identify the support interventions to be implemented by 30 June 2017	Through consultation, six support interventions were identified	Project proposal and contracting finalised by 30 September 2017	Project proposal and contracting finalised by 30 September 2017	Achieved	None	None
Strategic statement: To enhance understanding and analysis that support improvements in the functioning and performance of the NSI						
Annual target: 6 statistical reports and policy briefs submitted to Cabinet by 31 March 2018						
Performance indicator: Number of statistical reports and policy briefs submitted to Cabinet						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Gather data/evidence from project implementation activities. Identify and prioritise topics for policy briefs for the financial year	Data gathering completed for three of the four policy briefing that require data gathering	Produce drafts and gather inputs from/ validate with relevant stakeholders per policy brief.	Draft reports produced for policy briefings	Achieved	None	None
Annual target: Preapproval decisions provided within 90 days of date of receipt of application for the R&D tax incentive by 31 March 2018						
Performance indicator: Turnaround time for providing preapproval decisions on applications for the R&D tax incentive						
1st Quarter target as per APP	**1st Quarter actual output**	**2nd Quarter target as per APP**	**2nd Quarter actual output**	**Status**	**Reason for variance**	**Actions taken**
Preapproval decisions provided within 90 days	By 30 June 2017, no 2017 applications had received	Preapproval decisions provided within 90 days	None of the decisions was provided within the targeted 90 days. By 30	Not Achieved	As in Quarter 1, available capacity was used largely for clearing the pre-2017 applications, which required more time due to the complexity of those applications.	Staff time directed to compiling submissions for final decisions on pre-2017 applications, working with the Legal Unit to fast track the

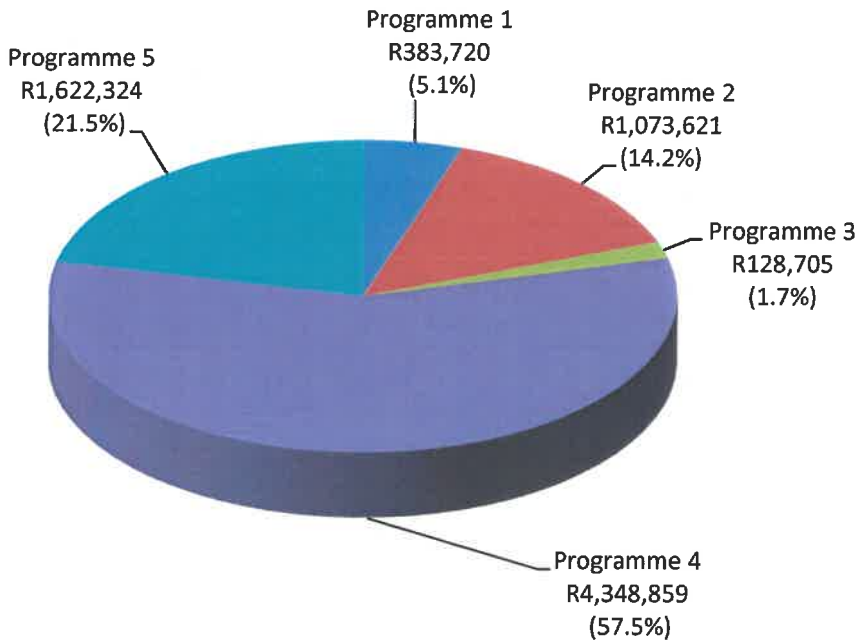
	decision letters within 90 days		September 2017, 22 of the 54 applications of 2017 received decisions. Average number of days in providing decisions was 135, an improvement from previous quarter performance.			submissions; Began with adjudication on 2017 applications, which managed to reduce average turnaround time considerably compared to same quarter in 2016/17; Implemented a schedule of adjudication meetings and process timelines

FINANCIAL PERSPECTIVE

Budget for 2017/18 financial year

The budget of the DST in the 2017/18 financial year is R7.557 billion of which 92.1% is allocated to transfer payments and 7.9% to administrative activities of the department. Figure 3 below analyses the distribution of allocations among the programmes.

Figure 3: DST budget split among the five Programmes (expressed in R'000)

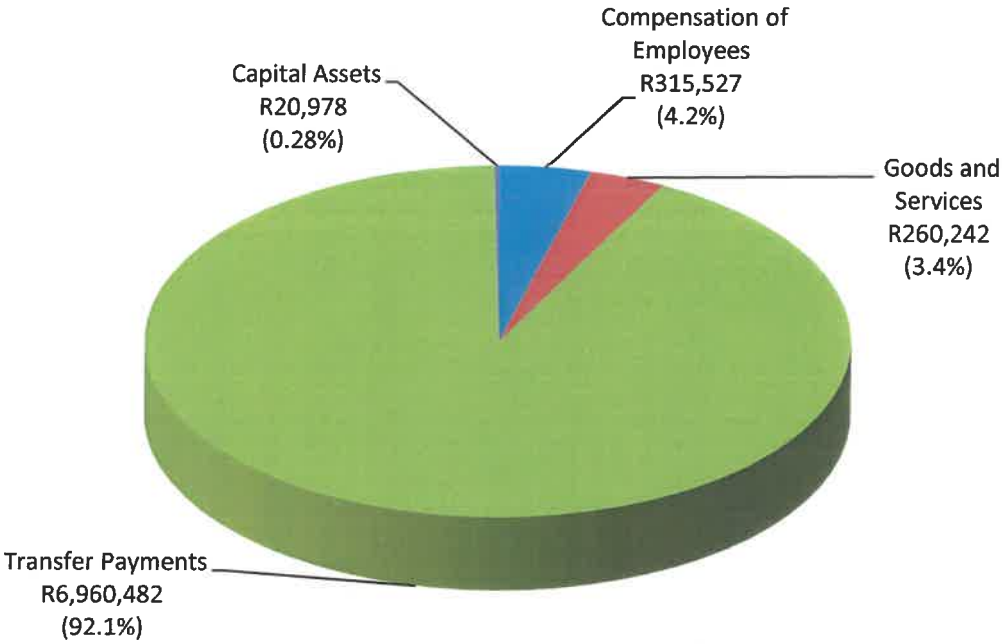


The bulk (93.2%) of the DST budget is allocated to three core Programmes of the Department (i.e. Programmes 2, 4 and 5). Programme 3 commands 1.7% of the total budget. The division according to the major items is detailed in Table 6 below.

Table 6: DST major item categories

Programme	Compensation of Employees	Goods and Services	Transfer Payments	Capital Assets	TOTAL
Programme 1	152 729	196 510	13 503	20 978	383 720
Programme 2	44 443	21 408	1 007 770		1 073 621
Programme 3	47 300	17 628	63 777		128 705
Programme 4	32 435	15 525	4 300 899		4 348 859
Programme 5	38 620	9 171	1 574 533		1 622 324
	315 527	**260 242**	**6 960 482**	**20 978**	**7 557 229**

Figure 4: Distribution of DST budget among the four major item categories (expressed in R'000)



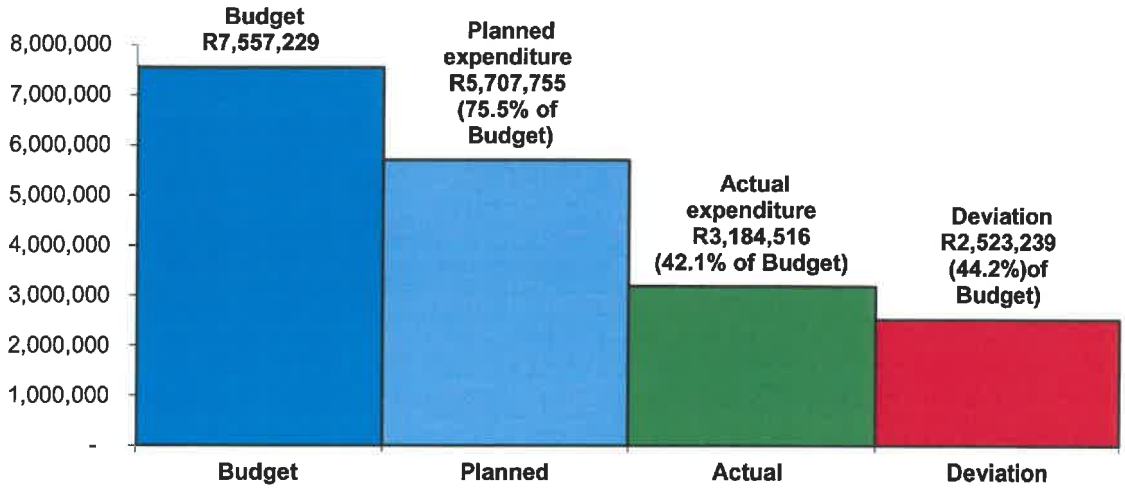
As depicted in Table 6 and Figure 4 above, the cost driver of the DST is transfer payments. The 92.1% of DST's budget is paid out as transfer payments to public institutions and other DST policy-implementing partners. The 38.8% of transfer payments are paid out as parliamentary grants to six DST-managed public institutions – namely: the Academy of Science of South African (ASSAf), the Council of Scientific and Industrial Research (CSIR), the Human Science Research Council (HSRC), the National Research Foundation (NRF), the South African Space Agency (SANSA) and the Technology Innovation Agency (TIA). The remaining 61.2% is payments for various projects, which are managed through contracts.

Expenditure

The DST projected to spend R5, 708 billion or 75.5% of its total budget by the end of the second quarter of the 2017/18 financial year. However R3, 184 billion or 42.1% was spent for the period under review, resulting in a variance of R2, 523 billion or 44.2 % of the projected expenditure as shown in Figure 5(a) below.

Figure 5 (a): DST Second quarter financial performance (including parliamentary grants)

R 'thousands



Another analysis was made on the same variables shown above, but this time the analysis excluded the parliamentary grants – allocations to ASSAf, CSIR, HSRC, NRF, TIA and SANSA. According to the previously mentioned analysis, the DST spent R1, 594 billion or 32.8% of the total budget up to the end of the second quarter of 2017/18 financial year, against the projected expenditure of R4, 118 billion or 84.8% of its total budget excluding the parliamentary grants. That resulted to a variance amounts to R2, 523 billion or 61.3% of the projected expenditure. The details are depicted in Figure 5(b) below.

Figure 5 (b): DST Second quarter financial performance (excluding parliamentary grants)

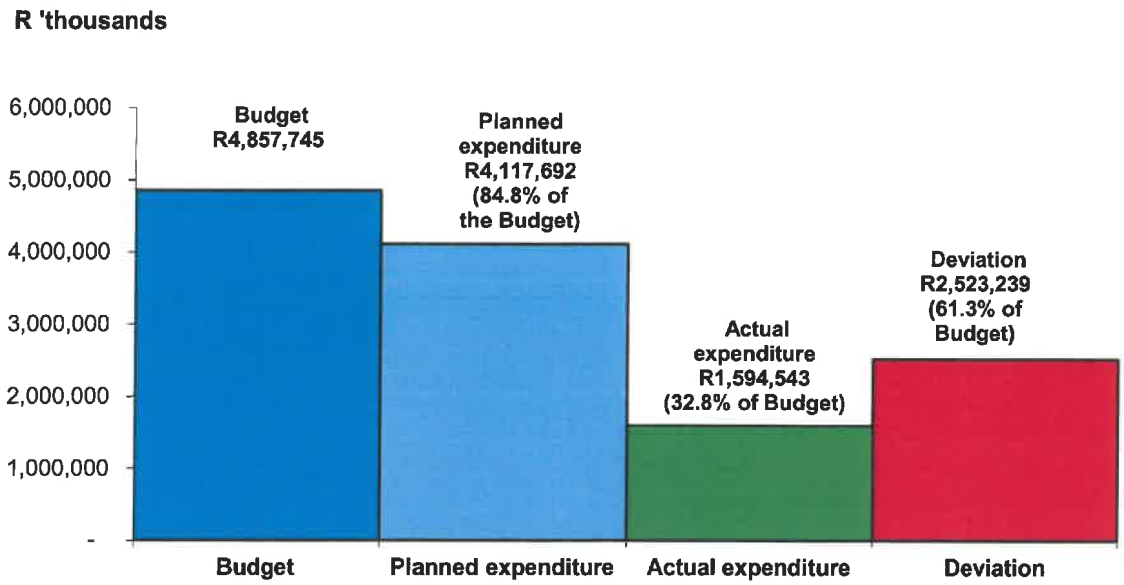


Figure 6 below illustrates the year-on-year comparison of the second quarter's financial performance for 2017/18 and 2016/17 financial years. The variance in the 2017/18 financial year is 44.1 percentage points higher than that of the 2016/17 financial year.

Figure 6: Year-on-year financial performance analysis (2017/18 and 2016/17)

R' thousands

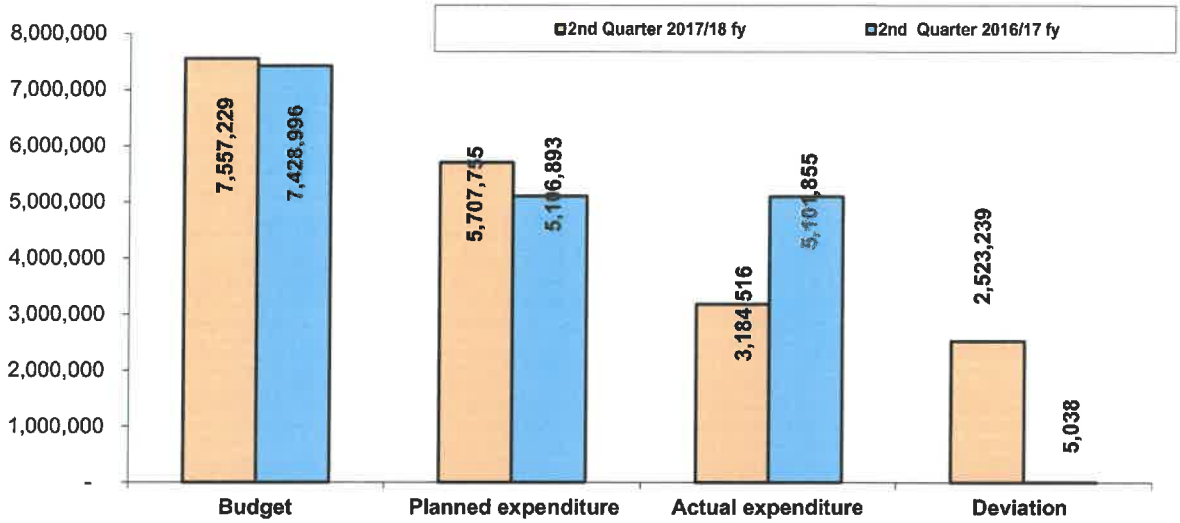


Figure 7(a) below gives a further breakdown of the second quarter expenditure per Programme. According to the analysis below, programmes recorded the variance between the planned expenditure and actual expenditure as follows: Administration 27.4%; Technology Innovation 30.4%; International Cooperation and Resources 37.8%; Research Development and Support 53.4% and Socio-Economic Innovation Partnerships 25.9%.

Figure 7(a) financial performance per Programme (including parliamentary grants)

R' thousands

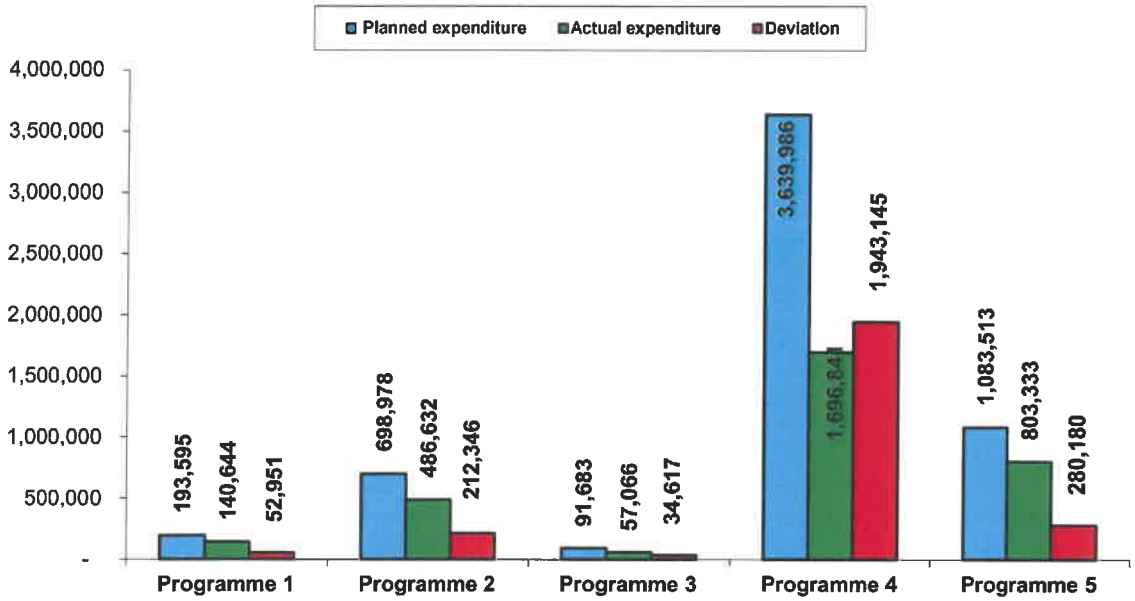
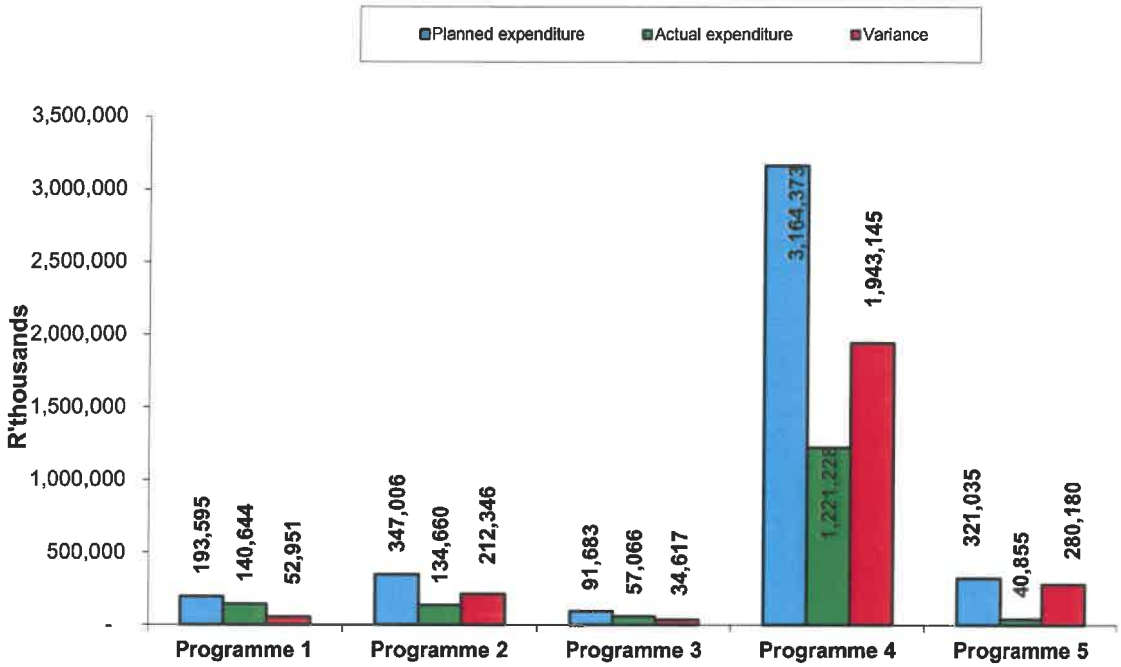


Figure 7(b) below gives a further breakdown of the second quarter expenditure per Programme excluding parliamentary grants. The variance from the projected expenditure ranges between 27.4% and 87.3%.

Figure 7(b): Financial performance per Programme (excluding parliamentary grants)

R' thousands



3.3 Donor funding

According to Table 7 below, the expenditure for the period amounts to R12, 545 million or 49% of the requested funding of R25, 538 million.

TABLE 7: ANALAYSIS OF FINANCIAL PERFORMANCE- DONOR FUNDING

Donor	Project	Programme	Funds requested	Actual spending as at 30 September 2017		Balance
				Amount R'000	%	
European Union	Socio Economic Dev	General Budget Support: Innovation for Rural Development	3 006	1 024	34%	1 982
European Union	Networking	EASASTAP Plus	960	166	17%	794
Finland	Bioeconomy	Biofisa II	20 000	10 000	50%	10 000
Portugal	Networking	Bridging Actions for GMES & Africa - BRAGMA	217	-	0%	217
USA	Bioeconomy	IKS Standards Development and Capacity Building	1 355	1 355	100%	(1)
Total			**25 538**	**12 545**	**49%**	**12 992**

APPROVAL

This is to confirm that the Executive Committee (Exco) of the Department of Science and Technology discussed the second quarter performance information report for the 2017/18 financial year at its meeting held on 27 November 2017 and that Exco made inputs on the contents of the report which reflects the DST's performance for the period covered in the report.

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PHIL MJWARA

DIRECTOR-GENERAL

DATE