



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

2019/20 Fourth Quarter Performance Report

Final

1 January – 31 March 2020

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LIST OF ABBREVIATIONS

ACCESS	Applied Centre for Climatic and Earth System Science South African
AGSA	Auditor-General 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
DIRCO	Department of International Relations and Cooperation
DPME	Department of Planning, Monitoring and Evaluation
DSI	Department of Science and Innovation
DTI	Department of Trade and Industry
EC	European Commission
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
iIKSSA	Indigenous Knowledge Systems of South Africa trust
IISA	International Institute for Applied Systems Analysis
IK	Indigenous Knowledge
IKS	Indigenous Knowledge Systems
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	Nuclear Energy Corporation South Africa
NEP	National Equipment Programme
NF	National Facilities
NICIS	National Integrated Cyberinfrastructure 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
R&D	Research and Development
RDI	Research, development and innovation
RDS	Research, development and support
RE	Renewable Energy
S&T	Science and Technology
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
SA-YSSP	Southern African-Young Scientists Summer Program
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
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1. INTRODUCTION

In an effort to enhance service delivery by the government using the 2019/20 Annual Performance Plan (APP) as an implementation mechanism, the Department continued to contribute to the government's Programme of Action within the Medium-Term Strategic Framework by implementing its five strategic outcome-oriented goals as articulated in the Department of Science and Innovations (DSI) Strategic Plan. These goals are a responsive, coordinated and efficient national system of innovation; increased knowledge generation; using knowledge for economic development; human capital development (HCD); and using knowledge for inclusive development.

The 1996 White Paper on Science and Technology, which introduced the concept of a national system of innovation (NSI), is the current underlying policy framework for the science and technology sector and continued to guide the DSI's service delivery environment in the current financial year. Guided by the current APP, the main focus of the Department during the reporting period is to create an environment in which its work and the work of the wider NSI contribute to the reduction of inequality, poverty and unemployment in South Africa, and give marginalised communities more and better opportunities to participate fully in the economy.

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 DSI's "Performance Information Policy and Procedure Manual" (PIPPM) require that, where there are deviations between planned and actual performance, reasons for the deviations be provided.

This fourth quarter review presents the progress made from 1 January to 31 March 2020, including the challenges and issues confronting DSI Programmes in their pursuit of the 2019/20 financial year targets as outlined in the APP. Also, this review details DSI financial transactions as at 31 March 2020.

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

Not Achieved	No target due	Achieved
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Note that the colour code is referring to the quarterly targets and these exclude the ones that 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.

2. DSI FOURTH QUARTER PERFORMANCE OVERVIEW

Performance information plays a significant role in measuring the contributions of the DSI to the priorities of the government, utilisation of budget allocations and the monitoring of service delivery in line with its mandate. Therefore, this report provides progress on the implementation of an institution's APP during the reporting quarter, with particular reference to monitoring delivery against quarterly performance targets.

Figure 1 below illustrates the performance of the DSI from January to March 2020 after having integrated all the latest amendments by the Programmes with regard to the finalisation of evidence, which was initially outstanding.

During the period under review, the total number of planned output targets was 46. The Department achieved 74% of the planned output targets and 26% of the planned output targets were not achieved.

Figure 1: The overall 2019/20 DSI's fourth-quarter performance

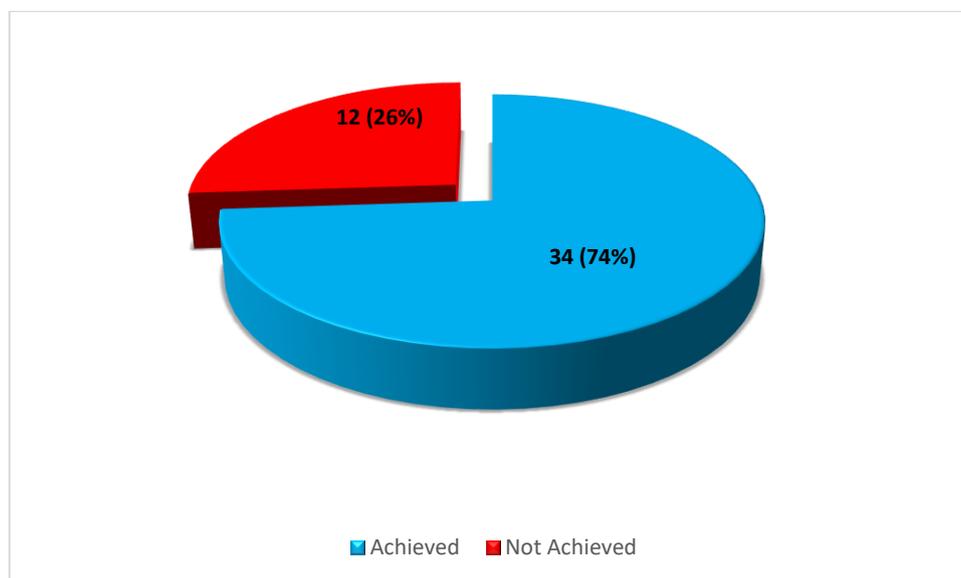
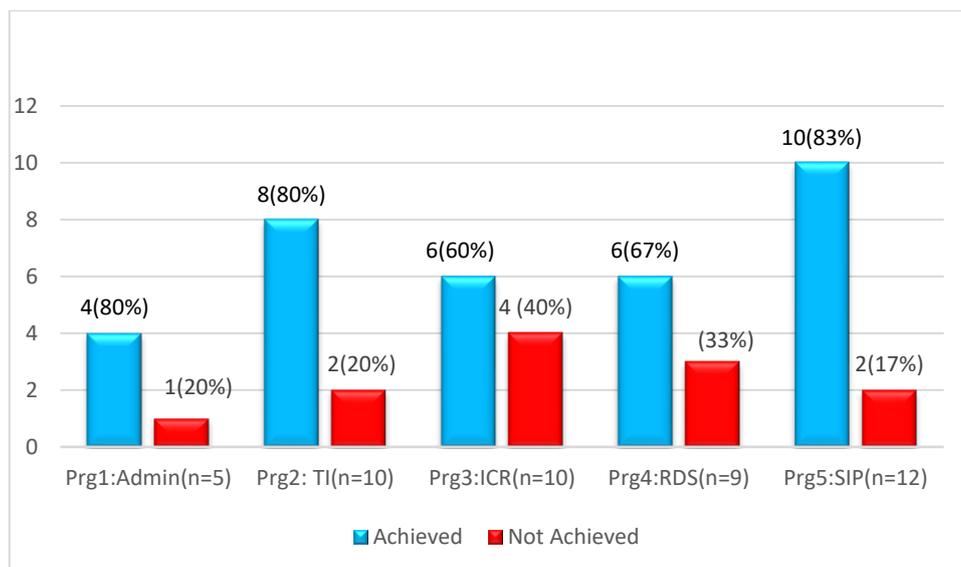


Figure 2 below illustrates the performance of the Department per Programme during the fourth quarter. The DSI planned to achieve a total number of 46

output targets for the 2019/20 financial year. Performance is based on all five Programmes.

- Programme 1 achieved 80% of its targets and 20% of the planned targets were not achieved,
- Programme 2 achieved 80% of its targets and 20% of the planned targets were not achieved,
- Programme 3 achieved 60% of its targets and 40% of the planned targets were not achieved,
- Programme 4 achieved 67% of its targets and 33% of the planned targets were not achieved,
- Programme 5 achieved 83% of its targets and 17% of the planned targets were not achieved.

Figure 2: The DSI fourth-quarter performance per Programme



QUARTER FOUR PERFORMANCE INFORMATION ANALYSIS

In overall the Department achieved 76% of the planned output targets. Due to the covid 19 pandemic programmes had a struggle with accessing evidence from the implementation agencies that made resolving some of the queries of evidence a challenge.

PROGRAMME 1: ADMINISTRATION

The purpose of the Programme is to conduct the overall management and administration of the Department; to ensure that organisations funded by the Department comply with good corporate governance standards and that their activities are aligned with the strategic focus of the NSI and monitor and evaluate the performance of the science councils.

The Programme consists of the following chief directorates:

- (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 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 (ERM):** Provides and drives an enabling environment in support of the 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 within the Department.
- (c) **Policy, Planning, Governance, Monitoring and Evaluation (PPGME):** Supports the DSI leadership in steering the NSI by facilitating the coordination of selected cross-cutting issues in the Department, strategic and operational planning, monitoring and evaluation 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 (IAA):** Serves as the 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 (HR):** Ensures that the Department is able to (a) provide a professional service through accurate, consistent and best employment practices in all its activities; (b) attract, retain and motivate 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; (f) instil a culture of service excellence; and (g) provide an environment that promotes health, wellness and safety, and embraces the value of diversity.
- (f) Finance:** Ensures the effective, efficient and economical 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 System 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 DSI 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. 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 (SASTA) and others and ensures the alignment of the DSI 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 all relevant legislation, and takes a proactive approach to deal with matters that have the potential to give rise to conflict or legal challenges.

TABLE 1: PROGRAMME 1 ADMINISTRATION

Strategic statement: To coordinate the identification, formulation and implementation of strategic initiatives and ensure that the priorities of the DSI and its entities are aligned to national priorities										
Annual target: DSI public entities' 2019/20 annual performance and annual reports plans approved by the Minister by 31 March 2020										
Performance indicator: DSI public entities' strategic and annual performance plans approved by the Minister and shareholder compacts signed by the Minister and chairpersons of the boards										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	First draft APPs for DSI public entities submitted to NT and the DPME by 31 August 2019, Annual reports of public entities tabled in Parliament by 30 September 2019	First draft APPs for DSI public entities were not submitted to NT and the DPME by 31 August 2019 however, the Annual reports of public entities were tabled in Parliament by 30 September 2019	Second draft APPs for DST public entities submitted to NT and the DPME by 30 November 2019	The draft APP's for the DST public entities were submitted to the NT and DPME by 31 October 2019	Third and final APPs for DST public entities approved by the Minister by 28 February 2020	Third and final APPs for DST public entities were approved by the Minister by 28 February 2020	Achieved	None	None
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 2020										
Performance indicator: Combined assurance annual report on the status of combined assurance presented to the Risk and Audit Committees										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	No target	No target due	1 combined assurance annual report on the status of combined assurance presented to the ERM and Audit Committees	1 combined assurance annual report on the status of combined assurance was presented to the ERM and Audit Committees	Achieved	None	None
Strategic statement: To provide strategic communication for the DSI and its entities through marketing, media and branding initiatives, and the Science Engagement										
Annual target: 24 media articles written to raise the DSI's public profile by 31 March 2020										
Performance indicator: Number of media articles written to raise the DSI's public profile										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
4 media articles written to raise the DSI's public profile	30 media articles were written to raise the DSI's public profile	8 media articles written to raise the DSI's public profile	95 media articles were written to raise the DSI's public profile	8 media articles written to raise the DSI's public profile	53 media articles written to raise the DSI's public profile	4 media articles written to raise the DSI's public profile	7 media articles written to raise the DSI's public profile	Achieved	Received more opportunities to publish on platforms.	None

Annual target: 10 public participation programmes held by 31 March 2020										
Performance indicator: Number of public participation programmes held										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
2 public participation programmes held	4 public participation programmes held	2 public participation programmes held	3 public participation programmes held	3 public participation programmes held	3 public participation programmes held	3 public participation programmes held	1 public participation programmes held	Not Achieved	The Morokweng Science Career Expo was cancelled in an effort to curb the spread of the COVID-19 pandemic. Note that 11/10 PPPs were held during the financial year under review.	Await notification from Presidency regarding hosting of PPPs
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										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th 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	Unqualified audit (clean audit) Opinion with no financial matters in the audit report	No target	No target due	No target	No target due	Achieved	None	None
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PROGRAMME 2: TECHNOLOGY INNOVATION

The purpose of the Programme is 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 intellectual property (IP), technology transfer and technology commercialisation.

The Programme provides policy leadership in the DSI's long-term cross-cutting RDI initiatives through four chief directorates.

Bioinnovation Chief Directorate leads the DSI's implementation of the National Bioeconomy Strategy, with its prime focus on the socio-economic outcomes and the strengthening of research and innovation competencies that form the strategic base of the bio-based NSI, rather than the mere development of technologies.

Hydrogen and Energy Chief Directorate develops 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. In line with the NDP, the MTSF and the Nine-Point Plan, the chief directorate seeks to facilitate the achievement of economic development and social equity by including locally developed cleaner energy technology solutions in South Africa's energy system.

Space Science and Technology 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.

The chief directorate is also focusing on the development of human capital through targeted programmes in the thematic areas of earth observation and satellite engineering; navigation and positioning; space science and exploration; and satellite communication. The satellite technology platforms and infrastructure in space S&T will play an important role in decision-making processes in both the public and private sectors.

Innovation Priorities and Instruments

The Chief Directorate supports and strengthens the innovation policy package (and related interventions) aimed at creating and sustaining an enabling environment for innovation, technology development, and commercialisation of publicly-funded Research and Development (R&D) initiatives. In performing this function, IPI supports the identification, development, creation and support of policy and institutional structures that facilitate technology development and its progression into national and international markets. The chief directorate also focuses on the conceptualisation, piloting and monitoring and evaluation of innovation policy instruments, such as those centred on the Department's Commercialisation Framework. It is further 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, nanotechnology, photonics and robotics.

National Intellectual Property Management Office (NIPMO) is the national implementing agency for the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR-PFRD Act), is currently located in the department as a specialised service delivery unit. NIPMO's key functions, as set out in the IPR Act. To facilitate the establishment of OTTs at institutions (27 higher education institutions and 11 Schedule 1 institutions, which are mostly science councils) and associated capacity development. To ensure compliance with the IPR Act and Regulations by recipients of publicly financed R&D. To provide funding through the IP Fund for the protection and maintenance of IP emanating from publicly financed R&D. To provide incentives for IP creators to encourage them to disclose, protect and commercialise their creations.

Highlights of the Quarter

Increased knowledge generation

In support of increased knowledge generation and locally developed technology, an international patent application was filed under the strategic Industrial Bio innovation programme for novel xylanase enzyme formulation with commercial application in the animal feed additive industry. Two technology demonstrators at TRL6 (i.e. prototype in a relevant environment) on 1) Cas9 (CRISPR associated protein 9) gene editing technology for the production of industrial enzyme and 2) on feruloyl esterase (FAE) for biorefinery application. A comprehensive IP due diligence (and freedom to operate) assessment to identify target enzymes with potential industrial and commercial application in the gene editing technology segment of molecular reagents market to inform a commercial strategy was completed during this quarter.

Knowledge Sharing

The IK-Based Technology Innovation Unit held a three-day workshop of all six platforms of the IK-Based Bio-Innovation Programme. In addition to the platforms, the meeting was attended by the South African Health Product Authority, Industrial Development Corporation, Departments of Environment, Forestry and Fisheries; Agriculture Land Reforms and Rural Development; Trade, Industry and Competition; and the Technology Innovation Agency. The Unit also presented the Medical Cannabis Strategy of the Master-Plan to the President at NEDLAC; the Inter-Ministerial Committee and the Ministerial Advisory Committee.

A very successful **National Sustainable Biotech Innovation Symposium** was held which highlighted some of the successes, challenges and opportunities for bio-innovation in South Africa.

A responsive, coordinated and efficient national system of innovation

Active Pharmaceutical Ingredient (API) cluster

The Department of Science and Innovation (DSI)' Health Innovation, Technology Innovation Agency (TIA) and the North West University (NWU) initiated the proposal to establish an Active Pharmaceutical Ingredient (API) cluster which is hosted by the NWU and managed by TIA. The API Cluster will drive the development of an innovative, competitive and world class API- manufacturing industry in South Africa through leveraging existing skills, technologies and facilities available in South Africa. The foundation of the cluster will be an aggressive home developed technology strategy which can be used to lever collaboration and partnerships within the pharmaceutical sector. The strategy will be underpinned by realigning current capabilities residing at various HEIs, research institutes and commercial companies towards a focused API process synthesis and engineering programme. The target is the development of a list of essential drugs for which APIs must be manufactured locally.

The API cluster's Steering Committee has been established and is chaired by the DSI. The committee has had two sittings to discuss the selection of API molecules as well as the developed Terms of Reference (ToR). From a pool of potential molecules, the meeting selected 14 API molecules considering the priority API's required and identified by the Department of Health (DoH), API's that have demonstrated market potential, etc.

The Sugar Industry Diversification Study was presented to the sugar cane millers, South African Sugar Association, SMRI, and Tongaat on 14 February 2020. The presentation was based on scenarios to save jobs, creation of jobs, and diversifying to energy etc.

The Renewable Energy Hub and Spokes (ERP) Review was noted by EXCO. The ERP review document was presented at EXCO on 27 March 2020. The progress was noted and welcomed but the Hydrogen and Energy team was requested to present the commercialisation plan of ERP technologies to Exco by 30 June 2020.

In support of a responsive, coordinated and efficient national system of innovation and policy development across government, the terms of reference for the Hydrogen Society Roadmap process were approved by the DSI EXCO on 27 March 2020. The terms of reference will pave the way for the development of the roadmap document, which will articulate how South Africa can position itself to derive economic benefit from the emerging Hydrogen Economy.

The National Health Laboratory Service (NHLS) board has approved their Innovation Plan, which aims to bring the NHLS into the community supporting and driving innovation in South Africa. In addition, the NHLS has signed a Memorandum of Understanding with the Technology Innovation Agency as a partnership to promote diagnostics development.

During the fourth quarter, NIPMO provided financial support to higher education institutions and science councils through the intellectual property (IP) Fund and Offices of Technology Transfer (OTT) Support Fund.

In terms of the IP Fund, financial support is provided for a range of activities which secure IP rights (IPR) for IP which was generated following publicly financed research and development (R&D) or associated directly with the product, process and/or service which resulted from. During this quarter, NIPMO granted a rebate of 50% (just over R20 million) to all eligible IPR protection and maintenance costs submitted to NIPMO by 23 higher education institutions and science councils residing in seven (7) different provinces. This support was extended to previously disadvantaged universities like the University of Venda and Mangosuthu University of Technology.

Furthermore, the OTT Support Fund provides financial support to higher education institutions and science councils to assist with the establishment and maintenance OTTs, building the human capacity and capabilities of the OTT, and empower the OTT to identify IP, protect IP (where appropriate) and ensure that this IP is deployed for socio-economic impact. During the fourth quarter, NIPMO supported seven (7) OTTs from four (4) different provinces through this fund. NIPMO through its partnership with WIPO continues to provide training/skills development to personnel with OTTs and

SMEs. In Quarter 4 NIPMO together with WIPO hosted a workshop on Commercialisation and Technology Transfer through this partnership.

Knowledge utilisation for economic development

By using knowledge and innovation for economic development, the following knowledge application products were developed by Hydrogen and Energy:

- Wind Turbine: Wind Energy – a 20 kW slip synchronous turbine has been built and completed and is now ready for field testing;
- Bambili/Horizon, e1, HyPlat fuel cell viewing;
- CCM for electrochemical compressor and partnership with Chlorochem regarding blue hydrogen;
- A 3-layer catalyst coated membrane (CCM) for electrochemical hydrogen compression and separation; as well as
- A portable hydrogen generator which supplies pure hydrogen gas to a gas chromatography for air quality analysis, were supported through the HySA Programme. The CCMs are earmarked for use in an electrochemical compressor to purify by-product hydrogen in partnership with Chlorchem, a local company that produces blue hydrogen from its chlorine production process.

In an effort to promote the use of knowledge and innovation for economic development, the Director-General, Dr Phil Mjwara unveiled five (5) fuel cell systems incorporating HySA intellectual property in the form of a catalyst and membrane electrode assemblies at a ceremony in Pretoria on 24 February 2020. Each of the methanol-based fuel cell systems is capable of producing 5kW of power. The fuel cell systems were developed in collaboration with Horizon and Element One, both global original equipment manufacturers, working together with Bambili Investments, a local and Black female owned small medium enterprise. The fuel cell systems, which will be deployed to provide power to public infrastructure, mark a significant milestone towards local manufacturing and the commercialisation of technology developed through the HySA Programme.

Bio-fuels Regulatory framework – the Transport and Renewable Energy team has contributed in the finalisation of the country's regulation framework and it was finally gazetted in February 2020. The DSI team has been asked by the Bio-fuels Task Team to assist with national project coordination.

The Agricultural Bio-economy Innovation Partnership Programme (ABIPP) now in its third year since inception, demonstrated expansion in a number of areas. The amount of co-funding leveraged and/or Increased Investments was R65 million per annum from an annual investment of R19 million. In quarter four, there were two significant developments in the funding of five aquaculture SMMEs with technology development, and two assessments in the mapping of value chains for indigenous, niche, underutilised crops, viz. marula and honey bush. For Marula, a R15 million contract was signed for the next five years that includes co-funding from the TIA and the IDC.

The innovation in support of agri-parks programme (including the maize nixtamalization programme) and the soybean food and nutrition programmes supported an accumulated total of 7 501 of beneficiaries (smallholder, black famers, communities, women & youth) in technology dissemination programmes. Within the farmer development support programme, 342 black farmers were supported and are growing towards commercial scale (growing from subsistence, emerging, small scale and commercial). ABIPP also created 9 new jobs.

South Africa as one of the GEO Co-Chairs (Lead) highlighted the success stories at the GEO Plenary and Ministerial Summit in Canberra Australia on the following:

- Contribution to the Blue Economy through the National Oceans and Coast Information Management System, and also ZACube-2 AIS data for vessels tracking (oceans traffic);
- South Africa is in the process of establishing a regional node for the Global Observation System for Mercury, which will contribute to the global mercury monitoring;

- Digital Earth South Africa, will lead and contribute to the development of Digital Earth Africa; and
- South Africa announced the hosting of the AfriGEO Secretariat by the Regional Centre for Mapping of Resources for Development (RCMRD) in Kenya, which is critical for raising awareness of Earth observations (EO) and GEO in the continent.

In October 2019 the DSI successfully supported 10 local space companies and SANSA to exhibited and showcased their capabilities and subsystems at the 70th International Astronautical Congress that was organised by the International Astronautical Federation. In addition to the exhibition, there were technical presentations done by the South African delegation.

Knowledge utilisation for inclusive development

Human Capital Development

A private sector partnership was put in place with Emvelo (concentrated solar power (CSP) - regarding interns). The Transport and Renewable Energy team has received a positive response from Emvelo, a black owned independent power producer and owners of the ilanga plant (100 MW CSP) to host interns that would enable skills transfer from the original equipment manufacturer (OEM) experts (Sener) to young black engineers. The next step is to formalise the agreement.

A private sector collaboration was identified with the Long-Term Europe Africa Research and Innovation Partnership (LEAP) on renewable energy (RE). The areas of AU-EU joint Renewable Energy RDI collaboration were identified and funds was committed to support LEAP RE. Thus far the AU has committed R132 million and the EU has committed R68 million. The total target to be committed is R480 million.

TABLE 2: PROGRAMME 2 – TECHNOLOGY INNOVATION

Strategic statement: To facilitate and resource investments in space science, energy, bio-innovation, nanotechnology, robotics, photonics, IKS, IP management, technology transfer and technology commercialisation										
Annual target: 19 instruments funded in support of knowledge utilisation by 31 March 2020										
Performance indicator: Number of instruments funded in support of knowledge utilisation										
1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	8 instruments funded in support of knowledge utilisation	7 instruments funded in support of knowledge utilisation	3 instruments funded in support of knowledge utilisation	5 instruments funded in support of knowledge utilisation	8 instruments funded in support of knowledge utilisation	7 instruments funded in support of knowledge utilisation	Not achieved	Although the target for Quarter 4 was not achieved, the annual target was achieved, because Quarter 3's target was overachieved.	None
Annual target: 120 knowledge outputs generated by 31 March 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken

No target	No target due	No target	No target due	No target	No target due	120 knowledge outputs generated	191 knowledge outputs generated	Achieved	There is a link between the number of knowledge outputs and the number of students supported. As the students were more than anticipated, the knowledge outputs were also higher than expected.	None
Annual target: 3 strategic policy directives in designated areas in support of economic sectors by 31 March 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	No target	No target due	3 strategic policy directives in designated areas in support of	6 strategic policy directives in designated areas in support of	Achieved	More request for policy directives were made	None

						economic sectors	economic sectors		than anticipated.	
Annual target: 100% of regulatory recommendations made to the GMO Executive Council through DAFF to support decision making by 31 March 2020										
Performance indicator: Percentage of regulatory recommendations made to the Executive Council through DAFF to support decision-making										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
100% of regulatory recommendations made from applications received to support decision making	100% of regulatory recommendations made from applications received to support decision making	100% of regulatory recommendations made from applications received to support decision making	100% of regulatory recommendations made from applications received to support decision making	100% of regulatory recommendations made from applications received to support decision making	100% of regulatory recommendations made from applications received to support decision making	100% of regulatory recommendations made from applications received to support decision making	100% of regulatory recommendations made from applications received to support decision making	Achieved	None	None
Annual target: 2 decision-support interventions maintained by 31 March 2020										
Performance indicator: Number of decision-support interventions developed or maintained										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	No target	No target due	2 decision-support interventions maintained	3 decision-support interventions developed and maintained	Achieved	There was an additional request from the Department of Energy to assist	None

									with developing the tool to inform agricultural target energy efficiency targets in the National Energy Efficiency Strategy	
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										
Annual target: 210 new disclosures reported by publicly funded institutions by 31 March 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
100 new disclosures reported by publicly funded institutions	150 new disclosures were received from publicly funded institutions by 30	No target	No target due	100 new disclosures reported by publicly funded institutions	101 new disclosures reported by publicly funded institutions by 31 December 2019	10 new disclosures reported by publicly funded institutions	7 new disclosures reported by publicly funded institutions	Not Achieved	A total of 258 (against a target of 210) new disclosures reported by 31 March 2020. This indicator	None

	September 2019									shows an increase in actionable disclosures received by publicly funded institutions which are reported to NIPMO and could be an indication that institutions are conducting more output driven research and development
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: 185 postgraduate students (master's and doctoral) funded in designated areas by 31 March 2020										
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	2nd Quarter actual output	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken

		target as per APP								
No target	No target due	No target	No target due	No target	No target due	185 postgraduate students (master's and doctoral) funded in designated areas	301 postgraduate students (master's and doctoral) funded in designated areas	Achieved	Planning was based on baselines as well as on budget cuts. However, demands for studentships are not always as planned or predicted.	None
Annual target: 230 trainees attending training initiatives in designated areas by 31 March 2020										
Performance indicator: Number of trainees attending training initiatives in designated areas										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	165 trainees attending training initiatives in designated areas	175 trainees attending training initiatives in designated areas	65 trainees attending training initiatives in designated areas	68 trainees attending training initiatives in designated areas	Achieved	There was a bigger interest than expected to attend the workshops and it was not deemed appropriate	None

									to deny people to register, as the workshops presented unique training opportunities.	
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: 10 knowledge application products developed in designated areas by 31 March 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	No target	No target due	10 knowledge application products developed in designated areas	20 knowledge application products developed in designated areas	Achieved	It is difficult to predict when and if research is going to lead to prototypes, pilots, demonstrators, etc, and therefore targets are	None

									set against research that are very near to the target. However, sometimes the research results much quicker into prototypes or technology demonstrators than expected.	
Annual target: 8 commercial outputs in designated areas by 31 March 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	No target	No target due	8 commercial outputs in designated areas	11 commercial outputs in designated areas	Achieved	Commercial targets are based on how far specific projects are in terms of technology	None

									readiness levels (TRL). Sometimes, given the non-linearity of innovation, some innovation proceeds much quicker towards commercialisation than anticipated.	
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PROGRAMME 3: INTERNATIONAL COOPERATION AND RESOURCES

The Purpose of the programme is to strategically develop, promote and manage international relationships, opportunities and S&T agreements that strengthen the NSI and enable an exchange of knowledge, capacity and resources between South Africa and its regional and international partners. International Cooperation and Resources (ICR) also support South African foreign policy through science diplomacy. The Programme has three 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 foreign investment promotion efforts, and fostering 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

The Department of Science and Innovation (DSI) hosted the Joint Committee meetings with India and Japan. Both engagements were aimed at the identification of new areas of cooperation. A part of the bilateral relationship Namibia launched their first Innovation Survey Report of 2012 to 2014 and the Research & Experimental

Development Survey Report with the support of the Centre for Science, Technology and Innovation Indicators (CeSTII). In celebrating International Women's Day, a joint moderated panel discussion was hosted with Ireland, to address the gender gap in the Science, Technology and Innovation (STI).

The 1st BRICS STI Steering Committee meeting was hosted by Russia to discuss the 2020/21 BRICS annual activity plan. The DSI participated in the South African-European Union Dialogue Facility, Circular Economy Study Tour Lessons Workshop, entitled "Building Innovative, Transformative, Integrated and Sustainably Developed Africa with the Cat/Chain Global Value Chain in the 4th Industrial Revolution". The ESASTAP website was officially launched and the EU funded programmes was promoted at the 3rd International Conference on Women in STEM in Africa. The draft Recommendation Framework for South-South Cooperation on STI Diplomacy was completed in partnership with the Centre for Science and Technology of the Non-Aligned and other Developing Countries (NAM S&T Centre) and the Academy of Science of South Africa (ASSAf). Due to the COVID-19 outbreak a number of strategic engagements were postponed, however, the Programme continued to engage to the relevant stakeholders remotely to ensure continuity during the challenging times.

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 DSI initiatives requiring external investments										
Annual target: R480m 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 DSI by 31 March 2020										
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 DSI										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	R80 m 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	R19 873 m in international funds directly invested in research, innovation and STI HCD programmes as well as research infrastructure investments in South Africa as part of	R400 m 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 DSI	R738,642,411 m 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	Achieved	Initiatives, especially the EU Horizon 2020 Framework Programme, which saw greater South African participation than anticipated, as well as an increase in cooperation with various bilateral partners.	None

				initiatives implemented by the DSI	cooperation initiatives implemented by the DSI		implemented by the DSI			
Annual target: R300m 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 DSI by 31 March 2020										
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 DSI										
1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	R50m 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	R55 209 m 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	R250 m 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	R 2,008,669,703 m 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	Achieved	Initiatives, especially the EU Horizon 2020 Framework Programme, which saw greater South African participation than anticipated, as well as an increase in cooperation with various bilateral partners	None

				implemente d by the DSI	implemente d by the DSI					
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 DSI's targets for human capital development, especially for international PhD training										
Annual target: 680 South African students participating in international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DSI by 31 March 2020										
Performance indicator: Number of South African students accepted into international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DSI										
1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	80 South African students participating in international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DSI	10 South African students participating in international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DSI	600 South African students participating in international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DSI	669 South African students participating in international training programmes offering a postgraduate qualification as part of cooperation initiatives facilitated by the DSI	Achieved	There is complete evidence for some students directly linked to DSI initiatives. However, as international partners are the sole investors in most of these opportunities, their privacy policies apply, and prevent them from providing	None

									personal information. A total of 491 SA students were reported as benefiting from partnerships (including the DST- Department of Higher Education and Training partnerships) during the financial year.	
Annual target: 600 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 DSI by 31 March 2020										
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 DSI										
1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
10 international partner organisations (i.e. legal entities)	104 international partner organisations (i.e. legal entities)	50 international partner organisations (i.e. legal entities)	58 international partner organisations (i.e. legal entities)	50 international partner organisations (i.e. legal entities)	25 international partner organisations (i.e. legal entities)	490 international partner organisations (i.e. legal entities) collaborating	430 international partner organisations (i.e. legal entities) collaborating	Not Achieved	With the reports made in earlier quarters, this target is achieved	None

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 DSI	collaborating with South African partners within the framework of formalised collaborative research, innovation or STI human capital development projects as part of cooperation initiatives	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 DSI	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 DSI	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 DSI	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 DSI	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 DSI	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 DSI			
Annual target: 30 dedicated international technical exchanges to build or reinforce South Africa’s capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI by 31 March 2020										
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 DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
5 dedicated international technical exchanges to build or	5 dedicated international technical exchanges such as	5 dedicated international technical exchanges to build or	5 dedicated international technical exchanges to build or	10 dedicated international technical exchanges	7 dedicated international technical exchanges to build or	10 dedicated international technical exchanges to build or	15 dedicated international technical exchanges to build or	Achieved	The target was exceeded owing to an increase in	None

reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI	workshops, seminars or training programmes to build or reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI	reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI	reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI	to build or reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI	reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI	reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI	reinforce South Africa's capacities in key STI domains specifically referenced in the DSI Strategic Plan, undertaken with the support of international partners and facilitated by the DSI		funding from international partners because of the successes of NSI partners in competitive STI initiatives, especially the EU Horizon 2020 Framework Programme, which saw greater South African participation than anticipated as well as an increase in cooperation with various bilateral 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: 120 research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DSI and at least one other African partner by 31 March 2020										

Performance indicator: Number of researchers, innovation and STI HCD cooperation projects, co-funded or supported in kind by the DSI and at least one other African partner										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	20 research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DSI and at least one other African partner	67 research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DSI and at least one other African partner	100 research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DSI and at least one other African partner	77 research, innovation and STI HCD cooperation projects co-funded or supported in kind by the DSI and at least one other African partner	Not Achieved	The target was achieved in earlier quarters	None
Annual target: R90m in international funds directly invested in African regional and continental research, innovation, STI HCD or research infrastructure programmes as a result of DSI facilitation by 31 March 2020										
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 DSI facilitation										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	No target	No target due	R90 m in international funds directly invested in African regional and	176,189,766 m in international funds directly invested in African	Achieved	The target was exceeded owing to an increase in funding from	None

						continental research, innovation, STI HCD or research infrastructure programmes as a result of DSI facilitation	regional and continental research, innovation, STI HCD or research infrastructure programmes as a result of DSI facilitation		international partners because of the successes of NSI partners in competitive STI initiatives, especially the EU Horizon 2020 Framework Programme, which saw greater South African participation than anticipated as well as an increase in cooperation with various bilateral partners.	
<p>Annual target: 20 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 DSI by 31 March 2020</p>										
<p>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 DSI</p>										

1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target due	No target due	No target due	No target due	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 DSI	13 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 DSI	15 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 DSI	7 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 DSI	Not Achieved	The target was achieved in earlier quarters	None
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 DSI intervention by 31 March 2020										
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 DSI intervention										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken

No target	No target due	2 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 DSI intervention	3 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 DSI intervention	No target	No target due	2 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 DSI intervention	0 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 DSI intervention	Not Achieved	The target was achieved in earlier quarters	None
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 DSI intervention by 31 March 2020										
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 DSI intervention										

1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	2 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 DSI intervention	1 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 DSI intervention	No target	No target due	2 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 DSI intervention	3 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 DSI intervention	Achieved	Increased opportunities has been taken up	None

PROGRAMME 4: RESEARCH DEVELOPMENT AND SUPPORT

The purpose of the Programme is to provide an enabling environment for research and knowledge production that promotes strategic development of basic sciences and priority science areas, through science promotion, human capital development, the provision of research infrastructure and relevant research support, in pursuit of South Africa's transition to a knowledge economy. The programme has four chief directorates.

- **The Human Capital and Science Promotion** focuses on developing and renewing science, engineering and technology human capital to promote knowledge generation, protection and exploitation, and to develop science platforms that exploit South Africa's geographical advantages. The Chief **Directorate** also promotes science, technology, engineering, mathematics and innovation literacy and awareness. Funding is provided to the NRF for programmes to develop research and human capital.
- **Basic Sciences and Infrastructure** facilitates the strategic implementation of research and innovation equipment and infrastructure to promote knowledge production in areas of national priority and to sustain R&D-led innovation. The Chief **Directorate** also promotes development and strengthening of basic or foundational sciences, such as physics, chemistry, 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 development within 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, palaeosciences, and indigenous knowledge systems.
- **Astronomy** supports the development of astronomical sciences around a multi-wavelength research strategy and provides strategic guidance and support to relevant astronomy institutions in the implementation of DSI astronomy programmes. Of particular relevance are the MeerKAT, the African Very Long Baseline Interferometry Network (AVN) project, and the Square Kilometre Array (SKA) projects.

Highlights of the Quarter

Building a responsive, coordinated, and efficient NSI

On the basis of the Open Science Framework that emanated from the SA-EU dialogue process, the DSI has initiated the process to formulate an open science policy for South Africa. The policy development process is led by an Open Science Advisory Board (OSAB) consisting of key Open Science stakeholder representatives from key government departments, universities, research funding bodies, professional societies, the private sector, science councils and citizen science organisations. The OSAB is supported by an Expert Task Team (ETT) who will consult stakeholders and formulate inputs for incorporation into the open science policy. The outline and structure of the Open Science Policy was finalised at the end of the 2019/2020 financial year.

Towards the end of the 2019/20 financial year, the world and the country became lockdown by the Covid-19 pandemic outbreak. For the government, it became crucial to use data driven decision-making, which largely depended on NICIS. NICIS through the CSIR was tasked to fulfil the following functions:

1. The CMORE platform, which provides the overall dashboard of the COVID-19 status to be migrated to NICIS for the full operation and data integrity.
2. Supporting the Contact Tracking using the data from the mobile operators.
3. Using the current Lengau Cluster to support studies to enable South Africa to respond accordingly in developing the vaccine for COVID-19
4. To ensure sufficient broadband connectivity to facilitate online teaching and learning at all the institutions of higher learning (universities and TVET colleges during the national lockdown.

The South African Population Research Infrastructure Network (SAPRIN) is a national research platform funded by the Department of Science and Innovation (DSI), under the ambit of the South African Research Infrastructure Roadmap (SARIR), and hosted by the South African Medical Research Council (SAMRC). It aims to produce up-to-date information on health and socio-economic wellbeing that is representative of

South Africa's population. With the advent of the Covid-19 pandemic in South Africa the value of a nationally supported research infrastructure for the country has been illustrated. The impact of Covid-19, and its related 'lockdown' policies, will be carefully observed, while feeding back this vital information to policy makers and planners.

Increasing knowledge generation

In support of the recently signed Promotion, Protection, Development and Management of Indigenous Knowledge Act (No 6 of 2019), the Department held its biannual Indigenous Knowledge Sharing Forum under the theme "Restoring the dignity of IK through quality documentation", in Upington, in the Northern Cape, from 2 to 5 March. About 70 delegates from across the country participated in the Knowledge Sharing Forum. The Knowledge Sharing Forum is a platform that brings together IK Documentation Centres (IKSDCs) under the auspices of the National Recordal System (NRS), a flagship project established to document IK.

The Knowledge Sharing Forum focused on the importance of the data quality of the work that is implemented by the IKSDCs in provinces. The leadership of the Khomani San, Oom Kruiper, and his team of IK recorders and members of the community Steering Committee presented and participated in a panel discussion on the importance of indigenous knowledge to a people in ensuring that their knowledge would be preserved for future generations. The Forum covered the technical aspects of the IKSDCs' work in getting the data ready for upload to the NRS' central database known as NIKMAS, and getting the system operational and ready to access in the near future.

Public Awareness on the IK Act, No 6 of 2019, in Kwa Zulu- Natal: The DSI in collaboration with the North West University conducted Public Awareness Campaign on the IK Act in the KwaZulu-Natal Province. The Awareness campaign was a four-day event, with each day dedicated to a certain community within the Province. Four communities, namely, eMadadeni, Mnambithi, eMzumbi and Gamalakhe were selected by for the Public Awareness Campaign, as each of these communities fall under different municipalities within the KZN Province. In rolling out the campaign the service providers presented the purpose of the Act in IsiZulu language which is

“ukuvikela, ukukhuthazwa, ukuthuthukiswa, nokuphatwa kolwazi lendabuko” which in English translates, “to protect, promote, develop and manage Indigenous knowledge”. The sessions in these four districts highlighted the main tenets of the IK Act and its underpinning, followed by an in-depth question and answers component. An estimated number of 80 participants attended each session, in the different district.

The All-Atlantic Ocean Research Forum was hosted by the European Commission in Brussels, Belgium. The DSI led a South African delegation of 15 composed of academics, government officials, government agencies and industry to participate at the *All-Atlantic Ocean Research Forum*. The forum provided an opportunity for the Atlantic Ocean community to come together consider what has been achieved in the previous years as well as project to the future on what envisaged. Most importantly, the forum was aimed at renewing the community commitment: “Our shared resource: The Atlantic Ocean”. The South African Participation at the plenary sessions was led by the Ambassador of South Africa to Belgium, Luxembourg, and the European Union, HE Dr Manelisi Genge, who emphasised that International cooperation is imperative to advance the global scientific challenges as well as the ability to implement the Sustainable Development Goals (such as SDG14, which prioritises the ocean). He also indicated that science and innovation are a priority for the Government of South Africa. The All-Atlantic forum was preceded by the workshops of the *All AtlaNtic Cooperation for Ocean Research and innovation* (AANChOR) that DSI co-leads. The South African stakeholders participated mainly at AANChOR platform workshops to draft different pilot projects for the Atlantic Ocean.

Bio Cultural Protocol in the Dr Ruth Segomotsi Mompati and Maruleng Districts (North West Province): In the fourth quarter of the financial season the DSI in collaboration with the North West University conducted a Bio Cultural Protocol in the in the Dr Ruth Segomotsi Mompati and Maruleng Districts in the North West Province. The strategy of a Biocultural Community Protocol (BCP) serves globally as an instrument to demand Fair and Equitable treatment in processes of Science and Business engagements with indigenous communities. Currently, there exist only two external BCP models in South Africa namely Biocultural Community Protocol of the Bushbuckridge Traditional Healers Community and the one of Richtersveld Khoi community. The Attaqua BCP developed by the DSI in collaboration with traditional

leadership of the Attaqua community was a ground-breaking cultural support document not only for the Western Cape but it also serves as a baseline in compiling BCP's for all South African Indigenous communities. No research activity can now commence without a BCP. There were approximately 60 participants both at the Dr Ruth Segomotsi Mompati and Maruleng Districts, respectively. A draft BCP will be presented to these communities respectively, for their approval.

As part of strengthening the implementation of the Global Change research, the DSI added a new research programme focusing on social and humanities aspects - Global Change Science and Society Research Programme Phase 2 (GCSSRP2). This followed the approval of the GCSSRP2 conceptual framework or concept note and implementation plan (GCSSRP2 Implementation Plan) by EXCO in March 2020. R&D research capability in global change research was increased further by the introduction of the Free State University – Phuthadithjaba (QwaQwa) Campus and Sol Plaatje University to the RVSC portfolio. The number of rural based universities participating in the RVSC programme is now five – currently the Universities of Limpopo, Fort Hare and Walter Sisulu are beneficiaries. Conditions of grant or contracts were signed with these two new RVSC in March to start operations in 2020/21. Over 30 research grants were awarded and funded, and 170 post-graduate students receiving funding support (full and partial bursaries), with 3 innovation products generated across the DSI/NRF funded global change portfolio (ACCESS, SAEON, RVSC, FBIP, AEON and SOCCO) by end of March 2020.

Human Capital Development

The cumulative total number of pipeline students supported up to the fourth quarter is 8 633; while the cumulative total number of PhD students supported is 2 990. The Programme is still awaiting the approval of the Postgraduate Funding Policy by the Minister.

Additional 8 new research chairs were awarded through the South African Research Chairs Initiative, bringing the total number to 246. Six Communities of Practice were established in the areas of strategic importance, i.e. climate change, marine, education and mining. The total number of CoP has increased to 15.

The SKA

The scientific capabilities of the MeerKAT telescope was significantly enhanced by the successful installation of eight (8) Large survey project (LSP) science mode correlators. This would allow the telescope to perform continuum science, do pulsar timing and produce spectacular high-resolution images.

Despite the postponement of its first science conference due to Covid19, the formal establishment of the African Astronomical Society (AfAS) was concluded as it has now become an operational entity. An interim project manager was appointed to put in place the required accounting and human resource systems and to initiate the various projects that form part of the organization. In addition to playing the facilitating and coordinating roles in the development of astronomy in Africa, AfAS will also serve as an umbrella organisation for other Pan-African astronomy initiatives funded by the South African Government, including the African Planetarium Association (APA), the African-European Radio Astronomy Programme (AERAP), and African Science Stars.

TABLE 4: PROGRAMME 4 – RESEARCH DEVELOPMENT AND SUPPORT

Strategic Statement: To contribute to the development of a representative, high-level human capital able to pursue locally relevant, globally competitive research and innovation activities										
Annual target: Not less than 3 100 PhD students awarded an annual bursary as reflected in the reports from the NRF and relevant entities by 31 March 2020										
Performance indicator: Total number of PhD students awarded bursaries annually as reflected in the reports from the NRF and relevant entities										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions are taken
Not less than 1 500 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	2 116 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	Not less than 2 300 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	2 750 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	Not less than 2 800 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	2 914 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	Not less than 3 100 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	2 991 PhD students awarded an annual bursary as reflected in the reports from NRF and relevant entities	Not Achieved	Target under-achieved by 3.5% (110). It is difficult to establish the reasons for deviation at this point. Engagements will be held with the entity. The abrupt end to the quarter may have compromised	Engagements will be held with the entity to establish the reasons for not meeting the target.

									collation of performance information. The deviation is out of the norm.	
Annual target: Not less than 10 800 pipeline postgraduate students awarded an annual bursary as reflected in the reports from the NRF and relevant entities by 31 March 2020										
Performance indicator: Total number 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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
Not less than 5 400 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	6 141 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	Not less than 8 100 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	7 756 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	Not less than 9 500 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	8 506 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	Not less than 10 800 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	8 632 pipeline postgraduate students (BTech and honours, and master's students) awarded an annual bursary	Not Achieved	Target under-achieved by 20% (2 167). It is difficult to establish the reasons at this point. Engagements will be held with the entity. The abrupt end to the quarter may have compromised collation of performance information. The deviation	Engagements will be held with the entity to establish the reasons for not meeting the target

		on awarding of research infrastructure grants issued by 30 September 2019	awarding of research infrastructure grants was issued by 30 September 2019			grants awarded as per award letters	awarded as per award letters annually			
Annual target: 3 500 Gbps total available broadband capacity provided by SANReN by 31 March 2020										
Performance indicator: Total available broadband capacity provided by SANReN per annum										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	New links and upgrade plan finalised by 30 September 2019	New links and upgrade plan finalised by 30 September 2019	No target	No target due	3 500 Gbps total available broadband capacity provided by SANReN	4522.01 available broadband capacity provided by SANReN per annum	Achieved	None	None
Strategic statement: To support and promote research that develops basic sciences through the production of new knowledge and relevant training opportunities										
Annual target: Not less than 4 500 researchers awarded an annual research grant through NRF-managed programmes as reflected by the NRF project reports by 31 March 2020										
Performance indicator: Total number of researchers awarded research grants annually through NRF-managed programmes as reflected in the NRF project reports										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken

<p>Not less than 2 000 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>1 580 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>Not less than 3 500 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>2 557 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>Not less than 4 000 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>2 831 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>Not less than 4 500 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>3 205 researchers awarded an annual research grant through NRF-managed programmes</p>	<p>Not Achieved</p>	<p>The target is under-achieved by 29% (1 295). The drastic reduction in the number of researchers supported is due to the revision of the Rated Researchers Programme funding model. Previously the Programme awarded grants annually to all rated researchers for the duration of their rating period. With the revised model, only P-</p>	<p>The NRF is being engaged to understand the implication of this reduction on the final target.</p>
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									rated researchers receive annual grants, and those in other rating categories receive once-off grants in the year in which they get their rating.	
Annual target: Not less 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 2020										
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										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	To be reported in quarter 4	No target	No target due	No target	No target due	Not less than 7 000 research articles published by NRF-funded researchers and cited in the Thomson Reuters Web of Science Citation Database as	Not less than 7 255 research articles published by NRF-funded researchers and cited in the Thomson Reuters	Achieved	None	None

						reflected in the NRF project reports	Web of Science Citation Database as reflected in the NRF project report			
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: 8 Large Survey project (LSP) Science Mode installed on MeerKAT by 31 March 2020										
Performance indicator: Number of Ultra High Frequency (UHF) science modes receivers installed on MeerKAT										
1st Quarter target as per APP	1st Quarter actual output	2nd Quarter target as per APP	2nd Quarter actual output	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	SKA SA Project approved progress report on installation of LSP science modes on MeerKAT correlator provided by 30 September 2019	SKA SA Project approved progress report on installation of LSP science modes on MeerKAT correlator provided by 30 September 2019	No target	No target due	8 Large Survey project (LSP) Science Mode installed on MeerKAT	8 Large Survey project (LSP) Science Mode were installed on MeerKAT by 31 March 2020	Achieved	None	None

Strategic statement: To promote public engagement on science, technology and innovation										
Annual target: Not less than 2.1 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 2020										
Performance indicator: Number of participants in science awareness and engagement programmes annually as reflected in project reports of the NRF and other service providers										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
Grant funding awarded to organisations implementing the initiatives by 30 June 2019	10 grants awarded to organisations implementing the science awareness and engagement initiatives by 30 June 2019	National Science Week held by 30 September 2019	National Science Week was held from 29 July to 3 August 2019	3 science festivals and 6 science, technology, engineering, mathematics and innovation Olympiads and competitions held by 31 December 2019	6 science festivals and 6 science, technology, engineering, mathematics and innovation Olympiads and competitions held by 31 December 2019.	Not less than 2.1 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	Approximately 29,431,670 participated in DSI-supported science awareness and engagement programme as per preliminary data obtained from the NRF other service providers by 31 March 2020	Achieved	Major participants in science festivals are learners. With the DSI having entered into formal collaboration agreements with provincial departments of education, it has become easier to organise festivals	None

PROGRAMME 5: SOCIO-ECONOMIC INNOVATION PARTNERSHIPS

This programme enhances 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:

- **Technology Localisation Beneficiation and Advanced Manufacturing** advance strategic medium and long-term sustainable economic growth and sector development priorities as well as government service delivery.
- **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 science and technology capacity to support a transition to a green economy.
- **Innovation for Inclusive Development** supports the experimentation of S&T-based innovations for tackling poverty including the creation of sustainable job and wealth opportunities, building sustainable human settlements, and enhancing the delivery of basic services.
- **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.

TABLE 5: PROGRAMME 5 – SOCIO-ECONOMIC INNOVATION PARTNERSHIPS

Strategic statement: Through knowledge, evidence and learning, to inform and influence how S&T can be used to achieve inclusive development										
Annual target : 6 knowledge products on innovation for inclusive development published by 31 March 2020										
Performance indicator: Number of knowledge products on innovation for inclusive development published										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
1 knowledge product on innovation for inclusive development published between 1 April 2019 and 30 June 2019	1 knowledge product on innovation for inclusive development was published between 1 April 2019 and 30 June 2019	2 knowledge products on innovation for inclusive development published between 1 April 2019 and 30 September 2019	2 knowledge products on innovation for inclusive development published between 1 April 2019 and 30 September 2019	3 knowledge products on innovation for inclusive development published between 1 April 2019 and 31 December 2019	3 knowledge products on innovation for inclusive development published between 1 April 2019 and 31 December 2019	6 knowledge products on innovation for inclusive development published on DST website by 31 March 2020	6 knowledge products on innovation for inclusive development published on DST website by 31 March 2020	Achieved	None	None
Annual target : 10 decision-support systems maintained and improved by 31 March 2020										
Performance indicator: Number of decision-support interventions introduced and maintained										

1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
Annual work plan approved for at least 2 decision-support systems between 1 April 2019 and 30 June 2019	Annual work plan was approved for at least 2 decision support systems between 1 April and 30 June 2019	Annual work plan approved for at least 8 decision support systems between 1 April 2019 and 30 September 2019	Annual work plan approved 9 decision support systems between 1 April 2019 and 30 September 2019	Annual work plan approved for at least 10 decision support systems between 1 April 2019 and 31 December 2019	Annual workplan approved for at least 10 decision support systems between 1 April 2019 and 31 December 2019	10 decision support systems maintained and improved between 1 April 2019 and 31 March 2020	10 decision support systems maintained and improved between 1 April 2019 and 31 March 2020	Achieved	None	None
Annual target: 9 learning interventions (seminars) generated 31 March 2020										
Performance indicator: Number of learning interventions (seminars, briefs, policy papers) generated										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
1 learning intervention generated between 1 April and 30 June 2019	Nothing reported	At least 2 learning interventions (seminars) between 1 April and	2 learning interventions (seminars) between 1 April and 30 September 2019	At least 5 learning interventions (seminars) between 1 April and 31	At least 6 learning interventions (seminars) between 1 April and 31 December 2019	9 learning interventions (seminars) between 1 April 2019 and 31 March 2020	At least 9 learning interventions (seminars) between 1 April 2019 and 31 March 2020	Achieved	None	None

		30 Septembe r 2019		December 2019						
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 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
50 honours, masters and doctoral students fully funded or co-funded between 1 April 2019 and 30 June 2019	49 honours, masters and doctoral students were fully funded or co-funded between 1 April 2019 and 30 June 2019	No target	No target due	No target	No target due	90 honours, master's and doctoral students fully funded in designated niche areas that support the green economy and sustainable development or co-funded between 1 April 2019 and 31 March 2020	138 honours, masters and doctoral students fully funded or co-funded in designated niche areas that support the green economy and sustainable development between 1 April 2019 and 31 March 2020	Achieved	None	None
Annual target: 4 knowledge and innovation products (for example, patents, prototypes, demonstrators, methodologies, and technology transfer packages) added to the sustainable development IP portfolio between 1 July 2019 and 31 March 2020										
Performance indicator: Number of knowledge and innovation products (for example, patents, prototypes, technology demonstrators, methodologies, and technology transfer packages) added to the sustainable development IP portfolio										

1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	At least 1 knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 30 September 2019	10 knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 30 September 2019	At least 1 knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 30 December 2019	At least 11 knowledge products added to the industrial development IP portfolio between 1 April 2019 and 31 December 2019	At least 4 knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 31 March 2020	At least 12 knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 31 March 2020	Achieved	The GBS funding has allowed for increased demonstrations of novel technology. The funding was received during the course of the MTSF period.	None
<p>Strategic statement: To identify, grow and sustain niche high-potential STI capabilities that-</p> <ul style="list-style-type: none"> • improve the competitiveness of existing industries with growth potential in aerospace, advanced manufacturing, chemicals, advanced metals, mining, ICTs, industry innovation programme (include sector innovation funds); and • facilitate the development of R&D-led new targeted industries 										
<p>Annual target: 252 master's and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, Industry Innovation Programme and the sector innovation fund) by 31 March 2020</p>										

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, Industry Innovation Programme and the sector innovation fund)										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
200 masters and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, Industry Innovation Programme and the sector innovation fund)	116 masters and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, Industry Innovation Programme and the sector innovation fund)	No target	No target due	No target	No target due	An additional 52 master's and doctoral students funded or cofunded by 31 March 2020, taking the total for the year to 252	231 masters and doctors' students fully funded or co-funded	Not Achieved	Due to a reduction in student funding allocations, in material problems on establishing new RDI partnerships (e.g. MMP and JRC) the target were missed. • Material problems were experience	The planning for FY20/21 will be substantially reviewed, also in context of the envisaged budgetary cuts and funding reallocations

	Program me and the sector innovation fund)									d in allocating student funding via the Mandela Mining Precinct, resulting in no students being funded in FY2019/20. • In addition, due to external delays, no students were funded
Annual target: 120 interns fully funded or co-funded in R&D related to design, manufacturing and product development by 31 March 2019										
Performance indicator: Number of interns fully funded or co-funded in R&D related to design, manufacturing and product development										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
100 interns fully funded or co-	190 interns fully	No target	No target due	No target	No target due	20 interns fully funded or cofunded	221 interns fully funded	Achieved	The TID states 'funded or	Continue to raise awareness

<p>funded in R&D related to design, manufacturing and product development</p>	<p>funded or co-funded in R&D related to design, manufacturing and product development</p>					<p>in R&D related to design, manufacturing and product development</p>	<p>or co-funded in R&D related to design, manufacturing and product development</p>		<p>co-funded'. This makes it impossible to define the total number of 'funded or co-funded' students up-front. In addition, where industry demand for interns increases, there is a greater willingness to co-fund (and also to greater amounts) resulting in 'saving' of the available funds which could then be allocated to fund more interns –</p>	<p>of the programme and to try and maximise the number of interns which could be funded.</p>
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									which is the desired outcome	
Annual target: At least 50 industrially relevant knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the industrial development IP portfolio by 31 March 2020										
Performance indicator: Number of industrially relevant knowledge and innovation products added to the Intellectual Property (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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
At least 1 industrially relevant knowledge or innovation product added to the industrial development IP portfolio between 1 April 2019 and 30 June 2019	Nothing reported	At least 4 industrially relevant knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 30 September 2019	6 industrially relevant knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 30 September 2019	At least 10 industrially relevant knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 31 December 2019	At least 17 industrially relevant knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 31 December 2019	At least 50 industrially relevant knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 31 March 2020	At least 57 industrial relevant knowledge or innovation products added to the industrial development IP portfolio between 1 April 2019 and 31 March 2020	Achieved	Increased awareness of what IP products are; that it should be reported and the fluctuating industry needs results in more IP products being reported – which is desirable	Continue raising awareness and improved reporting
Annual target: 9 instruments funded in support of increased localisation, competitiveness and R&D-led industry development by 31 March 2020										

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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
Annual work plans or contract approved for 6 support instruments	Annual work plans or contract approved for 9 support instruments	No target	No target due	No target	No target due	Annual work plans or contract approved for 9 support instruments	Annual work plans or contract approved for 9 support instruments	Achieved	None	None
Strategic statement: To strengthen provincial and rural innovation and production systems through analysis and catalytic interventions										
Annual target: 12 innovation-support interventions funded or co-funded that strengthen provincial or rural innovation systems by 31 March 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken
Annual work plan approved for at least 4 innovation support interventions between 1 April 2019 and	Annual work plan approved for at least 7 innovation support interventions between 1 April	Annual work plan approved for at least 9 innovation support interventions between	Annual work plan approved for 12 innovation support interventions between	Annual work plan approved for at least 11 innovation support interventions between 1 April 2019 and	Annual work plan approved for at least 15 innovation support interventions between 1 April 2019 and 31	Annual work plan approved for at least 12 innovation support interventions between 1 April 2019 and 31 March 2020	Annual workplans approved for at least 16 innovation support interventions between 1 April 2019 and 31 March 2020	Achieved	Due to the call for proposal process that we now use to solicit proposals for the interventions in the	None

30 June 2019	2019 and 30 June 2019	1 April 2019 and 30 September 2019	1 April 2019 and 30 September 2019	31 December 2019	December 2019				RISP, the interventions supported are dependent on the number and quality of proposals received	
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 approved by Exco for publication and/or submitted to Cabinet between 1 July 2019 and 31 March 2020										
Performance indicator: Number statistical reports and policy briefs approved by Exco for publication and/ or submission to Cabinet										
1 st Quarter target as per APP	1 st Quarter actual output	2 nd Quarter target as per APP	2 nd Quarter actual output	3 rd Quarter target as per APP	3 rd Quarter actual output	4 th Quarter target as per APP	4 th Quarter actual output	Status	Reason for variance	Actions taken
No target	No target due	No target	No target due	3 statistical reports approved by Exco for publication and/ or submitted to Cabinet between 1 April 2019 and 31 December 2019	1 statistical report approved by EXCO for publication between 1 April 2019 and 31 December 2019	6 statistical reports approved by Exco for publication and/ or submitted to Cabinet between 1 April 2019 and 31 March 2020	6 statistical reports approved by EXCO for publication between 1 April 2019 and 30 March 2020	Achieved	One of the policy briefs is a deliverable for the previous financial year 2018/19: Report on Impact evaluation on R&D tax incentive.	Quality review on the following reports initiated and reports are to be presented for EXCO approval in Quarter 1 of 2020/21: (1) Surv

									Two planned policy briefs still undergoing quality review processes (1) Survey of innovations in agriculture sector (2) Case studies on State Owned Enterprises R&D capabilities.	ey of innovations in agriculture sector. (2) Cas e studies on State Owned Enterprises R&D capabilities.
Strategic statement: To introduce and manage interventions and incentive programmes that increase the level of private sector investment in scientific or technological R&D										
Annual target: Preapproval decisions provided within 90 days from date of receipt on 80% of applications for the R&D tax incentive received between 1 January 2020 And 31 December 2020										
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	3rd Quarter target as per APP	3rd Quarter actual output	4th Quarter target as per APP	4th Quarter actual output	Status	Reason for variance	Actions taken

<p>Preapproval decisions provided within 90 days on 80% of applications received between 1 January 2019 and 31 March 2019</p>	<p>Preapproval decisions provided within 90 days on 21% (or 6) of the 29 applications received between 1 January 2019 and 31 March 2019</p>	<p>Preapproval decisions provided within 90 days on 80% of applications received between 1 April 2019 and 30 June 2019</p>	<p>Preapproval decisions provided within 90 days was none (or 0%) of the 31 applications received between 01 April 2019 and 30 June 2019</p>	<p>Preapproval decisions provided within 90 days on 80% of applications received between 1 July 2019 and 30 September 2019</p>	<p>Between 01 July 2019 and 30 September 2019, 23 applications were received, and 5 (or 22%) were provided with decisions within 90 days</p>	<p>Preapproval decisions provided within 90 days on 80% of applications received between 1 October 2019 and 31 December 2019</p>	<p>Between 1 October 2019 and 31 December 2019, 20 applications were received, and 1 (or 5%) was provided with decision within 90 days</p>	<p>Not Achieved</p>	<p>Underperformance due to cumulative effect of vacancies on staff capacity in the Directorate (there were 3 vacancies in Quarter 4) and impact of the December 2019 holidays</p>	<p>(1) Finalised adjudication on the 8 of the 13 pre-2020 applications. (2) Maintain turnaround times – finalised adjudication on the 19 of the 20 Quarter 3 applications. (3) Correction on Quarter 3 reporting – corrected the underreporting in Q3 of 10 applications whose decision was signed off on 18 December 2019 but not included in</p>
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										<p>the Q3 reports. (4) Measures to better monitor and fast track compilation and signing of submissions in all stages of the process were introduced. (5) Director (R&D Tax incentive) appointed and started on 01 February 2020. (6) Job Evaluations for vacant posts of DD and ASD (R&D Tax Incentive) finalised in preparation for</p>
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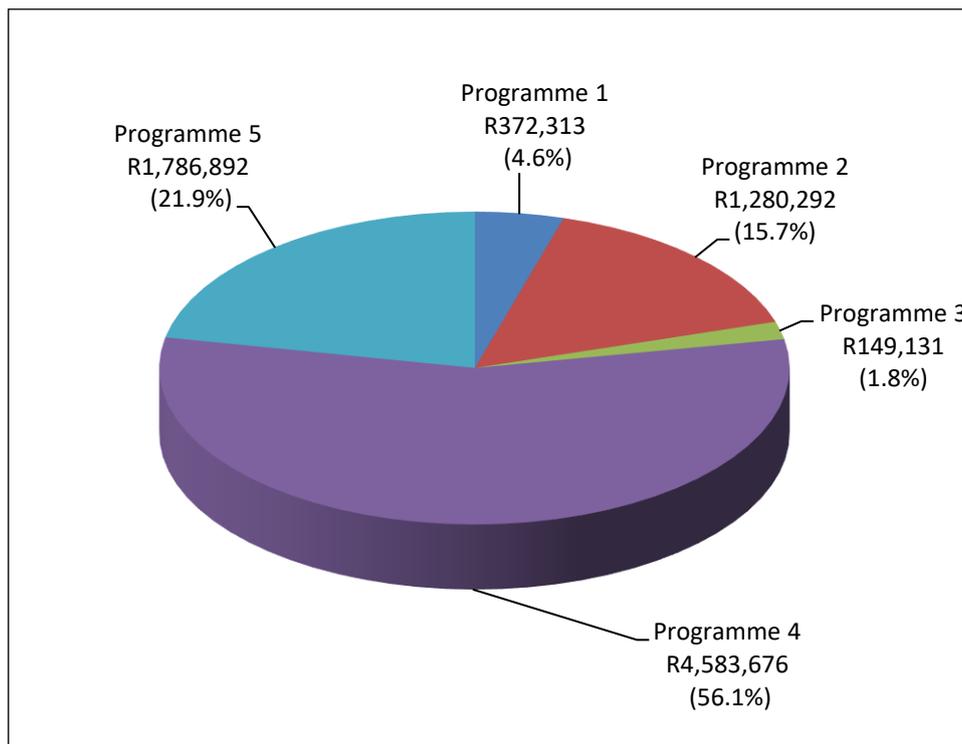
3. FINANCIAL PERSPECTIVE

3.1 Voted funds:

3.1.1 The budget for 2019/20 financial year

The budget of the DSI in the 2019/20 financial year is R8,172 billion – of which 92.4% is allocated to transfer payments and 7.6% to administrative activities of the department. Figure 3 below analyses the distribution of allocations among the programmes.

Figure 3: DSI budget split among the five Programmes



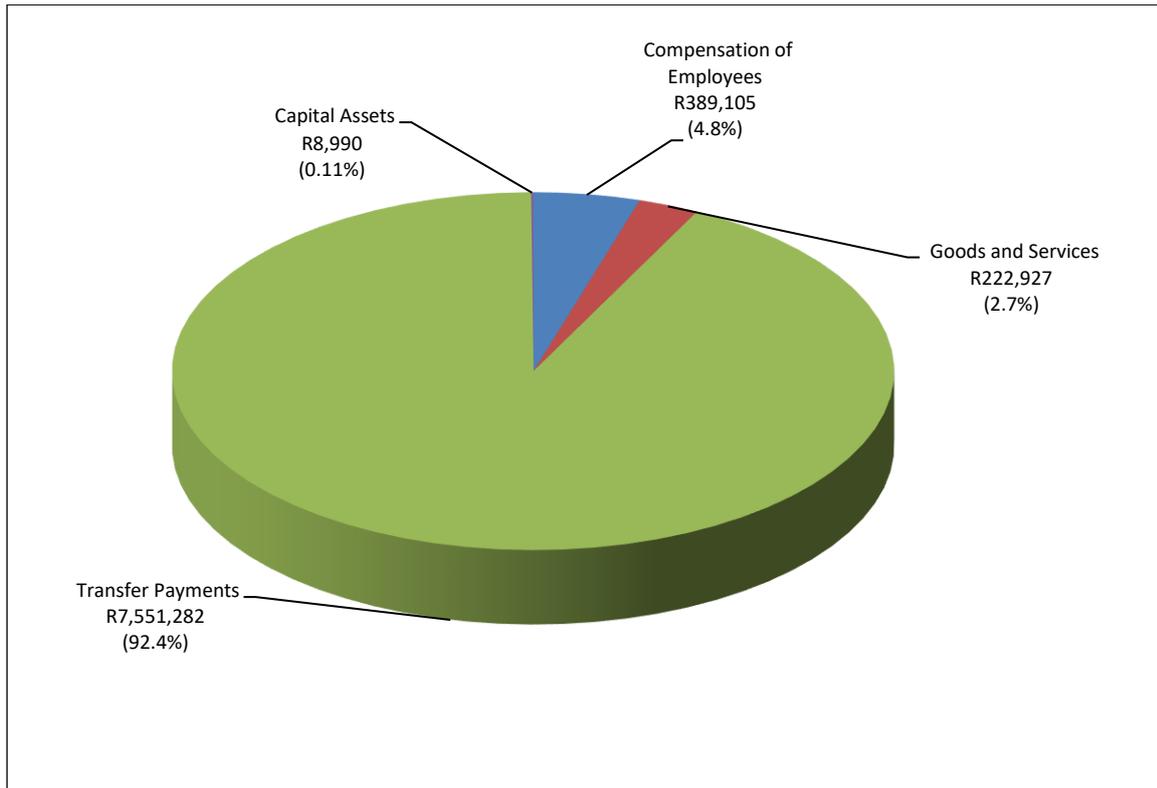
The bulk (93.7%) of the DSI budget is allocated to three core Programmes of the Department (i.e. Programmes 2, 4 and 5). Programme 3 commands 1.8% of the total budget. The division according to the major items is detailed in Table 6 below.

Table 6: DSI MAJOR ITEM CATEGORIES

R' thousands	Compensation of Employees	Goods and Services	Transfer Payments	Capital Assets	TOTAL
Programme 1	182,637	158,644	22,042	8,990	372,313
Programme 2	56,744	22,064	1,201,484		1,280,292
Programme 3	58,456	18,577	72,098		149,131
Programme 4	42,640	14,927	4,526,109		4,583,676
Programme 5	48,628	8,715	1,729,549		1,786,892
Totals	389,105	222,927	7,551,282	8,990	8,172,304

As depicted in Table 6 above and Figure 4 below, above, the cost driver of the DSI is transfer payments. 92.4% of the DSI budget is paid out as transfer payments to public institutions and other DSI policy implementing partners. 37.8% of the transfer payments are paid out as parliamentary grants to six DSI-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 62.2% is payments for various projects which are managed through contracts.

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



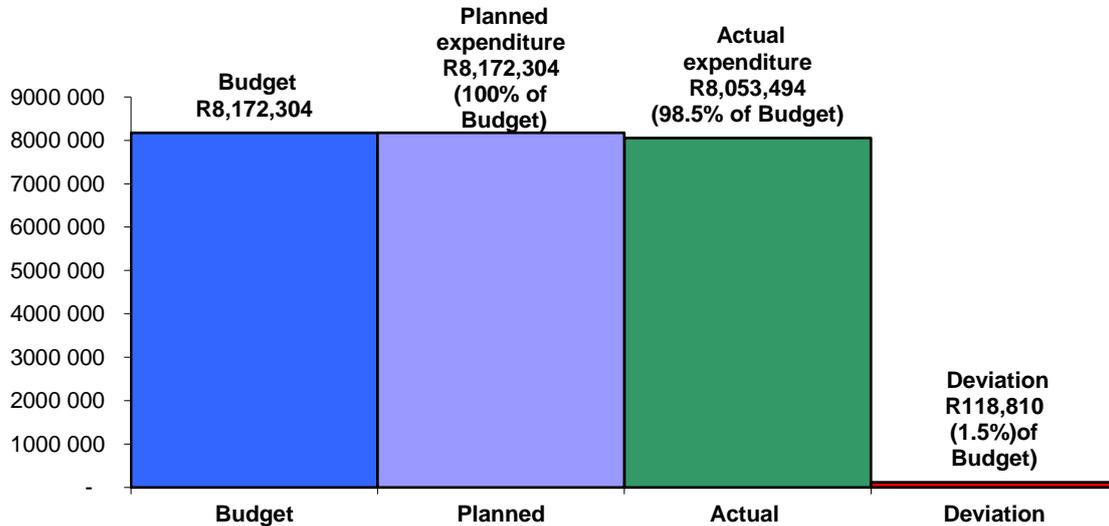
Expenditure

4. Expenditure

The DSI actual spend is R8,053 billion or 98.5% of its total budget by the end of the fourth quarter of the 2019/20 financial year, resulting in a variance of R119million or 1.5% as shown in Figure 5 below.

Figure 5: DSI fourth 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 aforesaid analysis the DSI spent R5,219 billion or 98.2% of the total budget (excluding parliamentary grants) up to the end of the fourth quarter of 2019/20 financial year, against the projected expenditure of R5,338 billion or 100.0% of its total budget excluding the parliamentary grants. That resulted to a positive variance of R119 million or 2.2% of the projected expenditure. The details are depicted in Figure 6 below.

Figure 6: DSI fourth quarter financial performance (excluding parliamentary grants)

R 'thousands

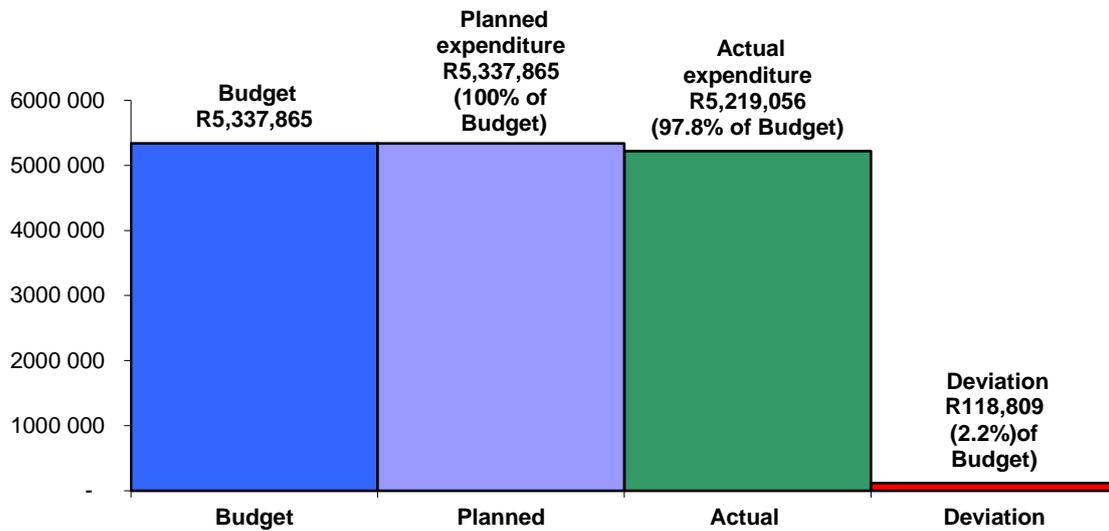


Figure 7 below illustrates the year-on-year comparison of the fourth quarter's financial performance for 2019/20 and 2018/19 financial years. The variance between the 2019/20 and 2018/19 financial year is 0.6 percent.

Figure 7: Year-on-year financial performance analysis (2019/20 and 2018/19)

R'thousands

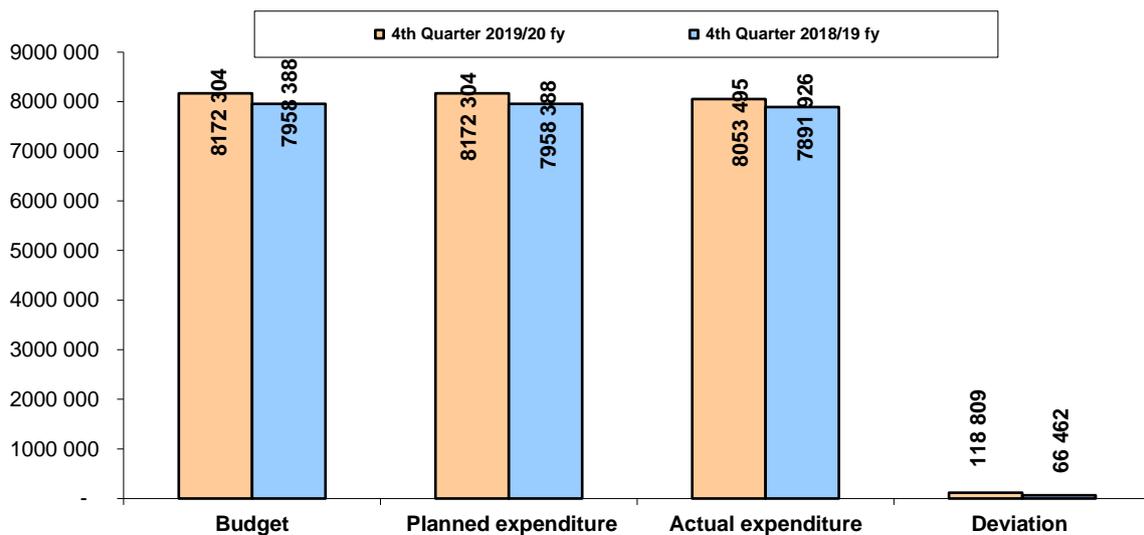


Figure 8 below gives a further breakdown of the fourth quarter expenditure per Programme. According to the analysis below, programmes recorded variance

between the planned expenditure and actual expenditure as follows: Administration 12.7%; Technology Innovation 3.4%; International Cooperation and Resources 9.6%; Research Development and Support 0.1% and Socio-Economic Innovation Partnerships 0.5%.

Figure 8: Financial performance per Programme (including parliamentary grants)

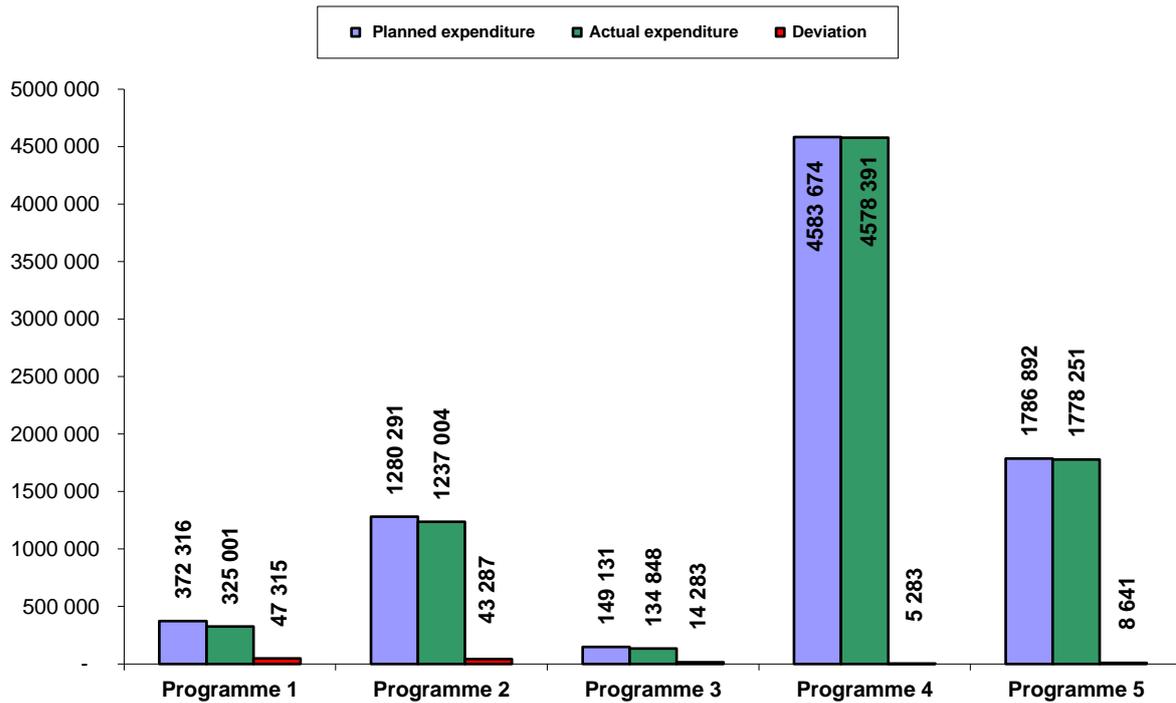
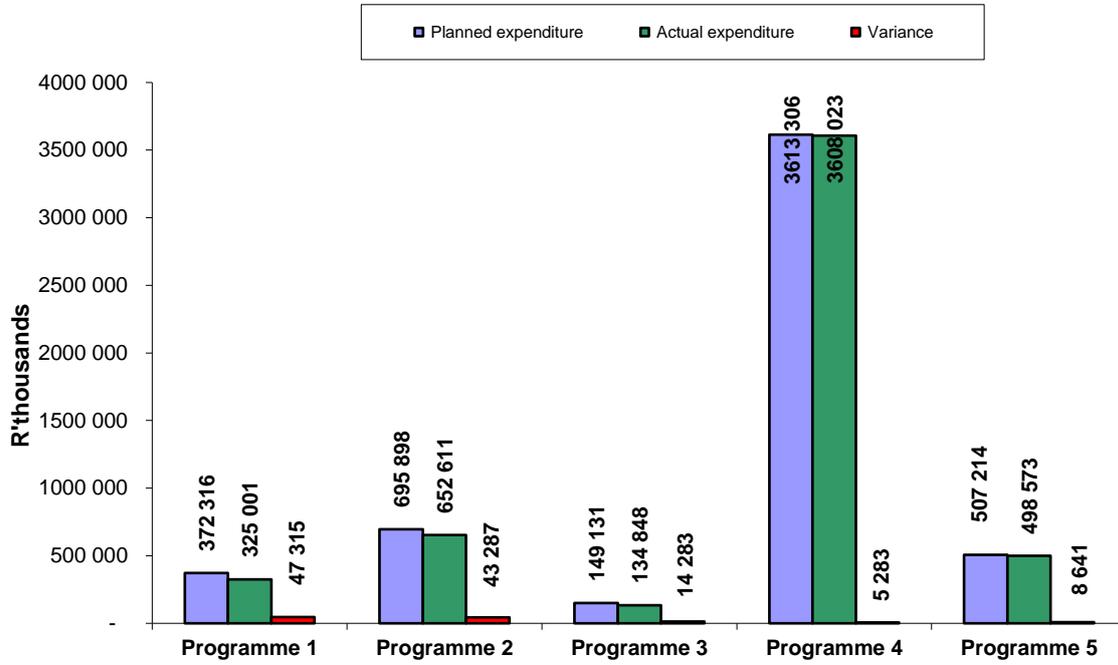


Figure 9 below gives a further breakdown of the fourth quarter expenditure per Programme excluding parliamentary grants. The variance from the projected expenditure ranges between -0.1% and 12.7%.

Figure 9: Financial performance per Programme (excluding parliamentary grants)

R' thousands



Donor funding

The donor funding received from the National Treasury for fourth quarter amounted to R11 219 million. The actual spending for this period amounted to R11 262 million, which went to compensation of employees and daily allowances. The report on donor funding focuses only on projects for which funds were requested and/or spent. A breakdown of donor funding is given below.

Table 7: Analysis of financial performance – Donor funding

Donor	Project name	Programme	Funds requested (R'000)	Actual spending as at 31 Mar. 2020		Balance (R'000)
				Amount (R'000)	% spending	
European Union	GBS Small Holder Essential Oils Value Chain Projects	Socio-Economic Innovation Partnerships	11 219	11 262	100.4%	(43)
TOTAL			11 219	11 262	100.4%	(43)

APPROVAL

This is to confirm that the Executive Committee (EXCO) of the Department of Science and Innovation discussed the Department's performance report for the fourth quarter of the 2019/20 financial year at its meeting held on the of20... and that Exco made inputs on the contents of the report which reflects the DSI's performance for the period covered in the report.



PHIL MJWARA

DIRECTOR-GENERAL

DATE: 30 JUNE 2020