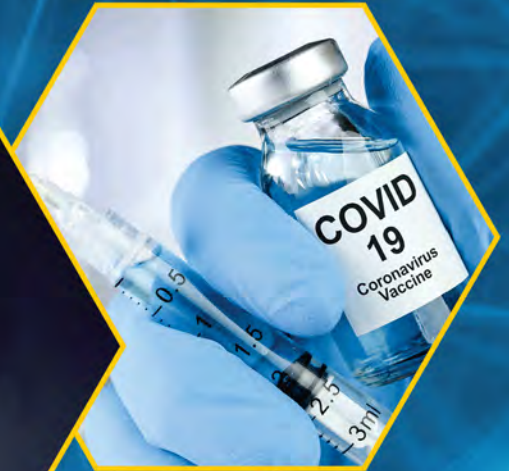


Annual Report

2021-2022 Financial Year

Department of Science and Innovation
Vote 35



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science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA



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PART

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A



GENERAL INFORMATION

I. GENERAL INFORMATION

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2. LIST OF ABBREVIATIONS

ABIPP	Agricultural Bioeconomy Innovation Partnership Programme
ABLE	Ablative Blow-down Liquid Engine
AGSA	Auditor-General South Africa
AIS	automatic identification system
API	active pharmaceutical ingredients
AMI	Advanced Materials Initiative
ARC	Agricultural Research Council
ASSAf	Academy of Science of South Africa
AU	African Union
BioPANZA	Bio Products Innovation Cluster Advancement Network South Africa
BRICS	Brazil, Russia, India, China and South Africa
CAPRISA	Centre for the AIDS Programme of Research in South Africa
COGTA	Department of Cooperative Governance and Traditional Affairs
CPD	continuing professional development
CPGR	Centre for Proteomic and Genomic Research
UNCTAD	United Nations Conference on Trade and Development
CPUT	Cape Peninsula University of Technology
CSIR	Council for Scientific and Industrial Research
DCDT	Department of Communications and Digital Technologies
DDM	District Development Model
DHET	Department of Higher Education and Training
DIRCO	Department of International Relations and Cooperation
DPME	Department of Planning, Monitoring and Evaluation
DPSA	Department of Public Service and Administration
DPWI	Department of Public Works and Infrastructure
DSI	Department of Science and Innovation
DTIC	Department of Trade, Industry and Competition
DSIDE	Data Science Impact and Decision Enhancement
DWYPD	Department of Women, Youth and People with Disabilities
ENE	Estimates of National Expenditure
ERM	Enterprise Risk Management
ERMC	Enterprise Risk Management Committee
ESS	Election Satisfaction Survey
EU	European Union
Exco	Executive Committee
FDA	United States Food and Drug Administration
FDCR	Foundational Digital Capabilities Research Programme
GIS	Geographic Information Systems
GIP	Grassroots Innovation Programme
HCD	human capital development
HCT	HIV counselling and testing
HDI	historically disadvantaged individual/institution
HESTIIL	Higher Education, Science, Technology and Innovation Institutional Landscape
HOA	home owner's allowance

2. LIST OF ABBREVIATIONS CONTINUED

HSRC	Human Sciences Research Council
HySA	Hydrogen South Africa
IAA	Internal Audit Activity
ICT	information and communication technology
IIA	Institute of Internal Auditors
IIP	Industry Innovation Partnership Programme
IK	Indigenous Knowledge
IK Act	The Protection, Promotion, Development and Management of Indigenous Knowledge Act
IKS	indigenous knowledge systems
IP	intellectual property
IPPF	International Professional Practice Framework
IPR Act	Intellectual Property Rights from Publicly Financed Research and Development Act
KRISP	KwaZulu-Natal Research, Innovation and Sequencing Platform
LED	local economic development
LIAT	Local Innovation Enhancement Toolbox
MDA	maritime domain awareness
MCS	Modified Cash Standard
MIMI	Municipal Innovation Maturity Index
MTEC	Medium-Term Expenditure Committee
MTEF	Medium-Term Expenditure Framework
MTSF	Medium-Term Strategic Framework
NACI	National Advisory Council on Innovation
NDP	National Development Plan
NEPAD	New Partnership for Africa's Development
NGS-SA	Network for Genomic Surveillance in South Africa
NICIS	National Integrated Cyberinfrastructure System
NIPMO	National Intellectual Property Management Office
NITheCS	The National Institute for Theoretical and Computational Sciences
NPDO	National Policy Data Observatory
NRF	National Research Foundation
NSI	National System of Innovation
ODA	official development assistance
OHSAS	Occupational Health and Safety Assessment Series
OHS	Occupational Health and Safety
OTT	office of technology transfer
PAA	Public Audit Act
PFMA	Public Finance Management Act
PPP	public-private partnerships
PYEI	Presidential Youth Employment Initiative
REIPPP	Renewable Energy Independent Power Producer Programme
R&D	research and development
RDI	research, development and innovation
RIMS	Research Information Management System
RISDP	Regional Indicative Strategic Development Plan

2. LIST OF ABBREVIATIONS CONTINUED

RISP	Regional Innovation Support Programme
SARIR	South African Research Infrastructure Roadmap
SDGs	Sustainable Development Goals
SIP	Strategic Integrated Projects
S&T	science and technology
SACNASP	South African Council for Natural Scientific Professions
SADC	Southern African Development Community
SAEON	South African Environmental Observation Network
SAHPRA	South African Health Products Regulatory Authority
SALGA	South African Local Government Association
SAMERDI	South African Mining Extraction Research, Development and Innovation
SAMRC	South African Medical Research Council
SANReN	South African National Research Network
SANSA	South African National Space Agency
SANSHEF	South Africa, National Survey on Health, Well-being, and Family Relations
SAPRIN	South African Population Research Infrastructure Network
SARAO	South African Radio Astronomy Observatory
SCOPA	Standing Committee on Public Accounts
SCM	Supply Chain Management
SETA	Sector Education and Training Authority
SETI	science, engineering, technology and innovation
SIFs	Sector Innovation Funds
SITA	State Information Technology Agency
SKA	Square Kilometre Array
SMMEs	small, medium and micro-enterprises
SMS	Senior Management Service
SPRP	Space Propulsion Research Programme
STI	science, technology and innovation
TADF	Technology Acquisition and Deployment Fund
TIA	Technology Innovation Agency
TRL	Technology Readiness Level
TSP	Technology Stations Programme
TUT	Tshwane University of Technology
TVET	technical and vocational education and training
UFS	University of the Free State
UHF	ultra-high frequency
UKZN	University of KwaZulu-Natal
UNDP	United Nations Development Programme
UoT	university of technology
VVISDP	Viability and Validation of Innovations for Service Delivery Programme
WAITRO	World Association of Industrial and Technological Research Organisations
WHO	World Health Organization
WRC	Water Research Commission
WRIU	Water RDI Implementation Unit

FOREWORD BY THE MINISTER



Dr BE Nzimande, MP
Minister of Higher Education,
Science and Innovation

I am pleased to present the 2021/22 Annual Report for the Department of Science and Innovation (DSI), which shows how the Department has supported and grown the capability of the national system of innovation (NSI) in the year under review to contribute to addressing national priorities. Science, technology and innovation (STI) are key to equitable economic growth, and underpin not only economic advances, but improvements in health systems, education and infrastructure. The National Development Plan maintains that countries characterised by strong STI capabilities are able to address poverty more effectively.

Guided by the White Paper on Science, Technology and Innovation and the STI Decadal Plan, the DSI and its entities are working to improve coherence and coordination between the DSI and other stakeholders, increase human capacity, expand the research enterprise and make the innovation environment more enabling.

The priorities of the Decadal Plan are also being used to shape innovation capabilities and solutions to enhance service delivery under the District Development Model, which is aimed at improving the coherence and impact of government service delivery and local socio-economic development, including job creation.

The DSI continued to respond to the Covid-19 pandemic across the NSI, supporting a number of projects to address the need for simple, accurate and affordable rapid diagnostic tests that can be performed in remote settings to reliably detect SARS-CoV-2. A few of these projects are at advanced stages of development, with CapeBio, in collaboration with the Council for Scientific and Industrial Research, having successfully developed a versatile, ready

to use continuous RT-PCR assay that is compatible with an array of point-of-care systems currently in use in South Africa.

The DSI and Technology Innovation Agency-funded project to develop Covid-19 rapid antigen tests locally, managed by the South African Medical Research Council, saw a rapid antigen acute infection test developed by Medical Diagnostech receive approval from the South African Health Products Regulatory Authority. The test provides results in two to 15 minutes and does not require any laboratory equipment, specially trained staff or electricity, while the results compare well with qPCR tests. All components are locally made and the cost per test is approximately R50.

We also launched the Active Pharmaceutical Ingredients Technology Innovation Cluster, established to manufacture biologically active components used to make finished pharmaceutical products such as tablets and capsules. South Africa's heavy reliance on API imports is one of the factors behind the high cost of health care locally. The country currently spends approximately R15 billion a year on imported APIs.

As human capabilities and skills development are major drivers of socio-economic change, particularly in previously marginalised communities, the Department has been providing grants through several instruments designed to strengthen research capacity at universities, including the South African Research Chairs Initiative and the Centres of Excellence Programme.

During the reporting period, a number of grants were awarded, including 3 201 research grants through programmes managed by the National Research Foundation. This saw the publication of over 9 116 research articles cited in the Web of Science citation database.

Investment in the development of skills and knowledge that can be used to create economic value for the country is vital. In the period under review the Department and some of its agencies funded a total of 8 170 postgraduate students, and hosted a total of 1 194 graduates and interns.

There has also been good progress in the strategic deployment of technology to enhance the modernisation and competitiveness of existing firms and sectors through the continuation of existing research, development and innovation (RDI) initiatives. Through SANSA, the DSI developed national geospatial decision-support tools providing access to up-to-date data, and base maps on national land use and cover layers, showing, for example, human settlements and water bodies. These provide information that can assist in planning and prioritising service delivery to communities, and direct efforts to avoid settlements in areas at risk of flooding.

In addition, a number of demonstration initiatives are introducing new ways of delivering services in municipalities. The Municipal Innovation Maturity Index is an information and decision-support tool to assist municipalities improve service delivery and enable smart, innovative cities in the future. In search of innovation-based systems to improve the delivery of sustainable human settlements, the DSI supported the demonstration of 3D printed houses using additive manufacturing technologies. The 3D construction printer will be piloted and demonstrated on a small scale in partnership with the KwaZulu-Natal Department of Human Settlements. This initiative was boosted by the launch of the Science, Technology and Innovation for Sustainable Human Settlements Roadmap in June 2021. The launch of this roadmap established a multi-stakeholder innovation compact for the sector for the next 10 years in support of the Decadal Plan.

The use of knowledge for the inclusive development agenda is aimed at supporting experimentation with STI-based innovations for tackling poverty, creating sustainable job opportunities, building sustainable human settlements and enhancing the delivery of basic services. The DSI investments made in this area supported the government's call for the integrated provision of basic service delivery that will benefit the ordinary citizens of South Africa. These investments have the potential to bring about future sources of economic growth, create new types of jobs, and provide solutions to challenges in healthcare, agriculture and water-related services.

In the year under review, the Grassroots Innovation Programme (GIP) facilitated access to multi-tiered

support packages for over 100 beneficiaries. This support for commercialisation benefited unemployed graduates emerging as entrepreneurs participating in the programme.

The DSI and its entities accelerated the implementation of initiatives supporting the commercialisation of innovations by youth entrepreneurs through the GIP and the Technology Acquisition and Deployment Fund, a strategy designed to increase the uptake and commercialisation of locally developed technologies.

Government introduced the Renewable Energy Independent Power Producer Programme to introduce new players and renewable energy into the national energy system. Currently, approximately 6 000 MW in the energy system come from solar photovoltaic (PV) technologies. Two DSI spin-off companies have signed a joint venture agreement to exploit the opportunities presented by the green energy transition. This will be achieved by building on their current services in solar resource measurements and onsite PV module testing.

Another initiative to reduce emissions is the CoalCO₂-X RDI project, which aims to develop technologies to reduce emissions from coal-fired boilers in the cement, energy, steel, and pulp and paper industries. The Department's support for these industries will help them to reduce the impact of the Carbon Border Adjustment Mechanism on their products. In addition, the Cabinet approved the Hydrogen South Africa Roadmap for the next 10 financial years. The roadmap is aimed at aligning energy stakeholders around the common goal of a just and inclusive net-zero economy by 2050. It also represents a significant step towards developing a global hydrogen economy and driving South Africa's energy transition.

Another highlight of 2021/22 was the R&D tax incentive programme's process to obtain public inputs on its effectiveness and design features through the publication of a discussion document and a National Treasury-DSI survey. These inputs are now being used, together with further industry engagements, to finalise the policy review of and amendments to section 11D of the Income Tax Act, in this way providing certainty to the private sector on the R&D tax incentive.

The DSI continues engagements with global science leaders to advance national priorities in multilateral forums. Through bilateral and multilateral cooperation opportunities with international partners, South Africa benefited from 806 international human capital development opportunities, with outcomes including postgraduate qualifications and technical exchanges in support of the policy intents of the White Paper on STI.

A notable achievement in the year under review was the critical role played by the Department in positioning South Africa as the host for a World Health Organization

mRNA pilot plant. Through science diplomacy, the Department continued to champion STI as a crucial focus for global development initiatives, especially in relation to the Sustainable Development Goals (SDGs). A significant achievement was a memorandum of understanding entered into with the United Nations Development Programme (UNDP) to support cooperation on SDG initiatives implemented by the Department. Proactive engagement with partners saw the provision of national data on gender-based violence strengthened.

With the European Union, the Department supported interventions aimed at developing a model for advancing local systems of innovation and production to support smallholder essential oils producers in rural settings.

In a more comprehensive approach to Pan-African cooperation, the Department supported projects

responding to the African Union's Agenda 2063, including the SADC Regional Indicative Strategic Development Plan.

I am grateful to the Deputy Minister, the Director-General of Science and Innovation, the staff of the Department, and the entities reporting to me for their part in these achievements. We need our many partners in the NSI to make a difference through STI.



Dr BE Nzimande, MP

Minister of Higher Education, Science and Innovation

AMAZWI ESANDULELA SIKANGQONGQOSHE

Ngiyajabula ukwethula uMbiko Wonyaka Ka-2021/22 woMnyango Wezesayensi Nokusungula Izinto Ezintsha (i-DSI), obonisa ukuthi uMnyango weseke futhi wakhulisa kanjani amandla ohlelo lukazwelonke lokusungula izinto ezintsha (i-NSI) kulo nyaka obuyekwezwayo ukuze ubambe iqhaza ekubhekanezi nezingangqangi zezwe.

Isayensi, ubuchwepheshe nokusungula izinto ezintsha kuyizinto ezibalulekile ekukhuleni komnotho ngokulinganayo, futhi azigcini nje ngokweseka intuthuko yezomnotho kuphela, kodwa zithuthukiswa nezinhlelo zezempilo, imfundo nengqalasizinda. UHlelo Lokuthuthukiswa Kwezwe (National Development Plan) lugcizelela ukuthi amazwe anamakhono aqinile e-STI ayakwazi ukubhekana kangcono nobubha.

Iholwa uMqulu Wezingxoxo (White Paper) weSayensi, Ubuchwepheshe Nokuqamba Izinto Ezintsha (i-STI) kanye noHlelo Lwe-STI Lweminyaka Eyishumi (STI Decadal Plan), i-DSI kanye nezinhlelo zayo isebenzela ukuthuthukisa ukubambisana nokuxhumana phakathi kwe-DSI nabanye ababambiqhaza, ukwandisa amandla abantu, ukwandisa ibhizinisi locwaningo nokwenza kube lula ukusungula izinto ezintsha.

Izinto eziseqhulwini zoHlelo Lweminyaka Eyishumi nazo zisetshenziselwa ukubumba amakhono okusungula izinto ezintsha nezixazululo zokuthuthukisa ukuhlinzekwa kwezidingangqangi ngaphansi koHlelo Lokuthuthukiswa Kwesifunda (District Development Model), okuhloswe ngalo ukwenza ngcono ukhambisana nomthelela kahulumeni wokulethwa kwezinsiza nokuthuthukiswa komnotho nezenhlalo endaweni, okubandakanya nokudalwa kwamathuba emisebenzi.

I-DSI iqhubekile nokusabela kubhubhane lwe-Covid-19 kuyo yonke i-NSI, yeseka inqwaba yamaphrojekthi okubhekana nesidingo sokuxilongelwa ukuhlonzwa okusheshayo okulula, okunembile nokungambi eqolo okungenziwa nasezindaweni ezithe qecelele ukuze kuhlonzwe ukuthi umuntu unayo yini i-SARS-CoV-2. Amanye alawa maphrojekthi asesesigabeni esiphezulu impela, kanti i-CapeBio, ngokubambisana noMkhandlu Wesayensi Nezocwaningo Lwezimboni, isithuthukise ngempumelelo uhlelo oluguququkayo, olulungele ukusebenzisa ngokuqhubekayo amathesti e-RT-PCR ehambisana nezinhlelo zokwelapha ezisetshenziswayo njengamanje eNingizimu Afrika.

Iphrojekthi exhaswe ngezimali yi-DSI ikanye ne-Technology Innovation Agency ukuthuthukisa izindlela ezisheshayo zokuthesta amagciwane e-Covid-19, okuyiphrojekthi elawulwa yi-South African Medical Research Council, ibone ithesti esheshayo yamagciwane eyenziwe yi-Medical Diagnostech ithola imvume evela eSouth African

Health Products Regulatory Authority. Le thesti ikhipha imiphumela emizuzwini emibili kuya kwengu-15 futhi ayidingi lutho lwaselabhoethri, abasebenzi abaqeqeshwe ngokukhethekile noma ugesi, kuyilapho imiphumela iqhathaniseka kahle namathesti e-qPCR. Zonke izingxeny zayo zenziwa lapha kwelakithi kanti izindleko zethesti ngayinye zilinganiselwa ku-R50.

Siphinde sethula i-Active Pharmaceutical Ingredients Technology Innovation Cluster, esungulelwe ukukhiqiza izinto ezisetshenziselwa ukwenza izinto zokwelapha ezinjengamaphilisi. Ukuthembela okukhulu kweNingizimu Afrika ekuthengeni izinto ze-API kwamanye amazwe kungenye yezinto ezidala izindleko eziphezulu zokwelapha kuleli. Njengamanje izwe lisebenzisa cishe u-R15 bhiliyoni ngonyaka kuma-API abuya kwamanye amazwe.

Njengoba ukuthuthukiswa kwamandla namakhono abantu kuyimbangela enkulu yoguquko kwezenhlalomnotho, ikakhulukazi emiphakathini eyayincishwe amathuba phambilini, uMnyango ubulokhu uhlinzeka ngezibonelelo ngokusebenzisa amathuluzi amaningana aklanyelwe ukuqinisa amakhono ocwaningo emanyuvesi, okubandakanya i-South African Research Chairs Initiative ne-Centres of Excellence Programme.

Phakathi nenkathi yalo mbiko, ziningana izibonelelo ezakhishwa, okuhlanganisa nezibonelelo zocwaningo ezingu-3 201 ngezinhlelo ezilawulwa yi-National Research Foundation. Lokhu kubone ukushicilelwa kwezindatshana zocwaningo ezingaphezu kuka-9 116 ezicashunwe kusizindalwazi se-Web of Science. Ukutshalwa kwezimali ekuthuthukisweni kwamakhono nolwazi olungasetshenziselwa ukwakha ukubaluleka komnotho wezwe kusemqoka. Kule nkathi ebuyekwezwayo uMnyango nezinye izinhlelo zawo uxhase ngezimali abafundi abangu-8 170 sebebonke, waphinde wasingatha inani labafundi abangu-1 194 abaphothule iziqu nabaqeqeshwayo.

Kuphinde kwaba nenqubekelaphambili ehle ekusetshenzisweni kwamasu obuchwepheshe ekuthuthukisweni kwesimanjemanje nokuncintisana kwamafemu nemikhakha ekhona njengamanje ngokuqhubeka nezinhlelo ezikhona zocwaningo, ukuthuthukisa nokusungula izinto ezintsha (i-RDI). Ngokusebenzisa i-SANSA, i-DSI ithuthukise amathuluzi kazwelonke okweseka izinqumo eziphatelene nomhlaba, anikeza imininingwane yakamuva, futhi agxilisa amabalazwe ekusetshenzisweni komhlaba kazwelonke nezingqimba zawo ezizumbozayo, abonisa, ngokwesibonelo, ukuhlaliswa kwabantu nezindawo zamanzi. Lokhu kuhlinzeka ngolwazi olungasiza ekuhleleni nasekubekeni eqhulwini ukulethwa kwezinsiza emiphakathini, kanye nemizamo eqondile yokugwema ukuhlaliswa kwabantu ezindaweni ezisengcupheni yezikhukhula.

Ngaphezu kwalokho, inqwaba yezinhlelo zezethulo ezibonisa izindlela ezintsha zokulethwa kwezidingo komasipala. I-Municipal Innovation Maturity Index iyithuluzi lolwazi nelokwenza izinqumo ukusiza omasipala bathuthukise ukulethwa kwezidingo futhi bakwazi nokwakha amadolobha aphucuzekile, akwazi ukusungula izinto ezintsha esikhathini esizayo.

Ekufuneni amasistimu asekelwe ezintweni ezintsha ukuze kuthuthukiswe ukulethwa kwezindawo zokuhlaliswa kwabantu ezisimeme, i-DSI yaseke ukuboniswa kwezindlu eziphrintiwe ze-3D kusetshenziswa ubuchwepheshe bokukhiqiza izinto. Iphrinta yokwakha ye-3D izothestwa futhi iboniswe ngezinga elincane ngokubambisana noMnyango Wezokuhlaliswa Kwabantu KwaZulu-Natal. Lesi sinyathelo sagququzelwa ukwethulwa koMkhombandlela Wesayensi, Ubuchwepheshe Nokusungulwa Kwezindlela Ezintsha Zokuhlaliswa Kwabantu Okusimeme ngoJuni 2021. Ukwethulwa kwalo mhlahlandlela kusungule uhlaka lwalo mkhakha lwababambiqhaza abahlukahlukene lweminyaka eyishumi ezayo ukweseka uHlelo Lweminyaka Eyishumi.

Ukusetshenziswa kolwazi lwenhloso yentuthuko edidiyelwe kuhloswe ngako ukweseka ukuthesta amasu amasha asekelwe kwi-STI ukuze kulwiwe nobubha, ukudala amathuba emisebenzi esimeme, ukwakha ukuhlaliswa kwabantu okusimeme kanye nokuthuthukisa ukulethwa kwezidingongqangi. Ukutshala kwe-DSI izimali okwenziwe kule ndawo kweseke ikhwelo likahlumeni lokuhlinzekwa okudidiyelwe kokulethwa kwezidingongqangi okuzohlomulisa izakhamuzi zaseNingizimu Afrika. Ukutshalwa kwalezi zimali kunamandla okuletha imithombo yesikhathi esizayo yokukhula komnotho, kudale izinhlobo ezintsha zemisebenzi, futhi kunikeze izixazululo ezinseleleni zezokwelapha, ezolimo kanye nezinsizakalo eziphathelele namanzi.

Kulo nyaka obuyekwezwayo, i-Grassroots Innovation Programme (i-GIP) yagququzela ukutholakala kwamaphakheji osizo anezigaba eziningi kubahlomuli abangaphezu kwekhulu. Lolu sizo lwezokuhweba luhlomulise abafundi abangasebenzi abangosomabhizinisi abasafufusa ababambe iqhaza kulolu hlelo.

I-DSI kanye nezinhlobo zayo yasheshisa ukuqaliswa kwezinhlelo ezeseke ukuthengiswa kwezinto ezintsha zosomabhizinisi abayintsha ngokusebenzisa i-GIP ne-Technology Acquisition and Deployment Fund, isu eliklanyelwe ukukhulisa ukusetshenziswa nokudayiswa kobuchwepheshe obenziwe kuleli.

Uhulumeni wethule uhlelo lwe-Renewable Energy Independent Power Producer Programme ukuze afake abakhiqizi abasha namandla avuselelekayo ohlelweni

lukazwelonke lwamandla. Njengamanje, cishe u-6 000 MW ohlelweni lwamandla uvela kwezobuchwepheshe be-solar photovoltaic (PV). Izinkampani ezimbili ze-DSI zisayine isivumelwano sokusebenzisana ukuze zisebenzise amathuba avezwa wuguquko lwamandla avuselelekayo. Lokhu kuzofezwa ngokwakhela phezu kwamasevisi azo amanje ekukaleni imithombo yelanga nasekuyihloleni.

Olunye uhlelo lokunciphisa ukungcola yiphrojekthi ye-CoalCO₂-X RDI, okuhloswe ngayo ukuthuthukisa ubuchwepheshe bokunciphisa i-carbon dioxide ephuma kuma-boiler asebenza ngamalahle ezimbonini zikasimende, amandla, insimb, i-pulp nephepha. Ukweseka koMnyango lezi zimboni kuzozisiza zehlise umthelela we-Carbon Border Adjustment Mechanism emikhiqizweni yazo.

Ukwengeza, iKhabhinethi ivume i-Hydrogen South Africa Roadmap yeminyaka yezimali eyishumi ezayo. Lo mhlahlandlela uhloselwe ukuhlanganisa ababambiqhaza bezamandla emgomweni ofanayo womnotho we-net-zero onobulungiswa nobandakanya wonke umuntu ngonyaka ka-2050. Uphinde umelele isinyathelo esibalulekile sokuthuthukisa umnotho we-hydrogen emhlabeni wonke nokuqhuba uguquko lwamandla eNingizimu Afrika.

Okunye okugqamile ku-2021/22 kube yinqubo ye-R&D yohlelo lokunxephezela ngentela ukuze kutholwe imibono yomphakathi ngokusebenza kwayo ngempumelelo kanye nezici zayo zokuklama ngokushicilelwa komqulu wezingxoxo nenhlobo ye-National Treasury-DSI. Le mibono iyasetshenziswa manje, kanye nezinye izinhlobo zokuxoxisana nezimboni, ukuze kuphuthulwe ukubuyekwezwa kwenqubomgomo nezichibiyelo zesigaba IID soMthetho We-Income Tax, ngale ndlela kunikezwe isiqiniseko emkhakheni ozimele mayelana nokunxeshelwa ngentela yi-R&D.

I-DSI iyaqhubeka nokuxoxisana nabaholi bezesayensi emhlabeni wonke ukuze kuthuthukiswe izinto ezibalulekile kuzwelonke ezithangamini zamazwe ahlukahlukene. Ngamathuba okubambisana phakathi kwamazwe amabili namazwe amaningi nabalingani bamazwe ngamazwe, iNingizimu Afrika ihlomule emathubeni angu-806 okuthuthukiswa kwabantu emhlabeni wonke, okube nemiphumela ehlanganisa neziqu zemfundo ephakeme kanye nokuhwebelana ngezobuchwepheshe ukuze kwesekwe izinhloso zenqubomgomo yoMqulu Wezingxoxo mayelana ne-STI.

Impumelelo ephawulekayo kulo nyaka obuyekwezwayo kube yiqhaza elibalulekile elibanjwe uMnyango ekuqhakambiseni iNingizimu Afrika njengesikhungo se-World Health Organization sokuhlola i-mRNA.

Ngokusebenzisana nesayensi, uMnyango uqhubekile nokuqhakambisa i-STI njengento ebalulekile ezinhlelweni zokuthuthukisa umhlaba, ikakhulukazi maqondana nama-Sustainable Development Goal (ama-SDG). Impumelelo enkulu kube yisivumelwano sokusebenzisana esenziwe ne-United Nations Development Programme (UNDP) ukuze kwesekwe ukubambisana ezinhlelweni ze-SDG eziqaliswe uMnyango. Ukuxhumana okuqinile nozakwethu kuqinise ukukhishwa kolwazi lodlame lobulili kuzwelonke.

Nge-European Union, uMnyango weseke usizo oluhloselwe ukwenza indlela yokuthuthukisa izinhlelo zasekhaya zokusungula izinto ezintsha nokukhiqiza ukuze kwesekwe abakhiqizi bamafutha abalulekile ezindaweni zasemaphandleni.

Ngendlela ebanzi yokusebenzisana ne-Afrika yonkana, uMnyango weseke amaprojekthi asabela kuyi-African

Union's Agenda 2063, abandakanya ne-SADC Regional Indicative Strategic Development Plan.

Ngibonga iPhini likaNgqongqoshe, uMqondisi-Jikelele wezeSayensi Nokusungula Izinto Ezintsha, abasebenzi boMnyango, nezinhlaka ezingaphansi kwami ngeqhaza labo bonke kule mpumelelo. Siyabadinga ozakwethu abaningi ku-NSI ukuze senze umehluko nge-STI.



Dkt BE Nzimande, MP

UNgqongqoshe Wezemfundo Ephakeme, Isayensi
Nokusungula Izinto

KETAPELE KA TONA

Ke itumelela go lo rolela Pego ya Ngwaga le Ngwaga ya 2021/22 ya Lefapha la Saense le Tlhamosešwa (Department of Science and Innovation [DSI]), e e bontshang ka fa Lefapha le ileng la ema nokeng le go tswelletsa pele ka gone kgono ya tsamaiso ya bosetšhaba ya tlhamosešwa (national system of innovation [NSI]) mo ngwageng wa go ntsha pego gore le tsenye letsogo go thusa ka tharabololo ya mathata a bosetšhaba a a tlhokang go etelediwa kwa pele.

Saense, thekenoloji le tlhamosešwa di botlhokwa mo go tliseng kgolo e e tshwareleng lobaka lo lo leele ya ikonomi, e bile ga di tshegetse fela kgatelopele ya ikonomi, mme gape di tliša tokafatso ya ditsamaiso tsa pholo, thuto le ditlamelwa. Leano-Tlhabololo la Bosetšhaba le bontsha gore dinaga tse di nang le dikgono tsa STI di ka kgona go rarabolola lehuma ka katlego fela thata.

Ka go kaelwa ke Lokwalopuso Lwa Mabudusatsela lwa Saense, Thekenoloji le Tlhamosešwa (Science, Technology and Innovation [STI]) le Leano la Dingwaga di le Lesome la STI, DSI le ditheo tsa yone di dira ka natla go tokafatsa tomagano le tirisano mmogo fa ga re ga DSI le bana-le-seabe ba bangwe, go oketsa palo ya badiri, go oketsa tiro ya patlisiso le go godisa bokgoni mo tirong ya tlhamosešwa.

Dilo tse di etelediwang kwa pele tsa Leano la Dingwaga di le Lesome le tsone di dirisediwa go tlhama bokgoni le ditharabololo tsa tlhamosešwa go tokafatsa tlamelo ka ditirelo e e dirwang go ya ka Mokgwa wa Tlhabololo ya Kgaolo, e boikaelelo jwa yone e leng go tokafatsa tomagano e e siameng ya dilo le diphelelo tseo ditirelo tse puso e tlamelang ke tsone di nang le yone le tlhabololo ya selegae ya loago le ikonomi, go akaretsa le go tlhama ditiro.

DSI e ne ya tswelletsa pele go tsibogela leroborobo la Covid-19 mo NSI yotlhe, e tshegetsa palo ya diporojeke di le mmalwa go rarabolola bothata jwa tlhokego ya go nna le diteko tsa go lemoga bolwetse ka bonako tse di motlhofo, tse di boammaaruri le tse di sa tureng tse ba ba tlhatlhabiwang ba ka di dirang ba le kwa mafelong a bone go tlhola SARS-CoV-2 ka tsela e e nepagetseng. Go tlhamiwa ga di le mmalwa tsa diporojeke tseno go gatetse pele, tse mo go tsone CapeBio e e dirisanang mmogo le Lekgotla la Patlisiso ka Tsa Saense le Intaseteri, e tlhamileng ka katlego mokgwa o o kgonang go fetofetoga le maemo o o tswelletsang pele wa tlhatlhobo o o setseng o siametse go ka dirisiwa wa RT-PCR o o tsamaisanang le ditsamaiso tsa go tlhokomelela balwetse kwa ba leng gone tse ga jaanong jaana di dirisiwang mo Aforikaborwa.

Porojeke e e tshegediwang ka madi ya DSI le ya Setheo sa Tlhamosešwa sa Thekenoloji ya go tlhama diteko tse dipholo tsa tsone di bonwang ka bonako tsa Covid-19, se se laolwang ke Lekgotla la Aforikaborwa la Patlisiso ka tsa

Kalafi, e ne e le ya go dira gore teko -tshwaetsego ya ka bonako ya go tlhama dilwantsha-twatsi, e e tlhamilweng ke Medical Diagnostech e rebolwe ke Bathati ba Taolo ba Dikumo tsa Pholo ba Aforika Borwa. Dipholo tsa teko eno di bonwa morago ga metsotso e le mebedi go ya go e le 15 e bile ga di tlhoke didirisiwa dipe tsa laboratori, badiri ba ba katisitsweng kgotsa motlakase, mme dipholo tseo di tshwana thata le diteko tsa qPCR. Didirisiwa tsotlhe tse di dirwang ka tsone di itiretsewe mono gae e bile tuelo ya teko nngwe le nngwe e ka nna R50.

Gape re ne ra tlhama Didirisiwa Tsa Tlhamosešwa ya Thekenoloji Tsa go Dira Ditswaki Tsa Tlhamo ya Melemo ya Kalafi, tse boikaelelo jwa tsone e leng go tlhama dikumo tsa melemo ya kalafi jaaka dipilisi le dikhepisele. Lengwe la mabaka a go bo tlhokomelo ya pholo e tura mo nageng ya rona ke gore Aforikaborwa e ikaegile thata ka thomeloteng ya API. Ga jaanong jaana naga ya rona e dirisa mo e ka nnang R15 bilione ka ngwaga ya thomeloteng ya di API.

E re ka tlhabololo ya dikgono-tiro tsa batho e le tsone tse thata-thata di tlhotlheletsang phetogo mo loagong le mo ikonoming, segolobogolo mo baaging bao ditshwanelo tsa bone di kileng tsa bo di gatakelwa, Lefapha le ntse le tlamela ka dithuso-madi ka dithulaganyo tse di farologaneng tse di diretsweng go nonotsha bokgoni jwa go dira patlisiso kwa diyunibesiting, go akaretsa le Letsholo la Badulasetulo ba patlisiso ba Aforikaborwa le Disenthara Tsa Lenaneo la Maemo a a Kwa Godimo.

Mo lobakeng lwa go ntsha pego, go ne ga abiwa dithuso-madi di le mmalwa, go akaretsa le dithuso-madi di le 3 201 tsa patlisiso ka mananeo-thuto a a laolwang ke Mokgatlho wa Bosetšhaba wa Patlisiso. Seno se ne sa felela ka go nopolwa ga diathikele di le 9 116 tsa patlisiso mo Webong ya Saense ya dinopolo tsa bobolokelotshedimisetso.

Go botlhokwa go tlhama dikgono-tiro le kitso tse di ka dirisediwang go tlhama boleng jwa ikonomi ya naga ya rona. Mo lobakeng lwa go ntshiwa ga pego, Lefapha mmogo le ditheo tsa lone le ne la tshegetsa ka madi baithuti ba morago ga kalogo ba le 8 170, mme la amogela baalobi mmogo le bakatisediwa-tiro ba le 1 194.

Gape go nnile le kgatelopele mo tirisong e e logetsweng maano ya thekenoloji ya go tokafatsa madirelo a a leng teng gore e nne a segompiano le go tokafatsa go gaisana ga one le a mangwe ka tswelletsang pele ya patlisiso e e dirwang gone jaanong ya matsholo a patlisiso, tlhabololo le tlhamosešwa (research, development and innovation [RDI]).

Ka SANSA, DSI e ne ya tlhama didirisiwa tsa tshegetso ya go dira tshwetso tsa tshedimisetso ka mafelo a a rileng, tse di tlamelang ka tshedimisetso e e mo nakong, le dimmapa

tša tiriso ya bosetšhaba ya mafatshe le dillaga tša mmu, tše ka sekai, di bontshang tlanelo ka matlo le madiba a metsi. Dilo tšeno di tlanela ka tshedimose tšo e e ka thusang ka tlanelo ya ditirelo mo baaging le go di eteletsā kwa pele, le go dira maiteko a go se nne le mafelo-bonno a a mo kotsing ya go rwalelelwa ke metsi a dipula tše di maatla.

Mo godimo ga moo, go na le matsholo a le mmalwa a dipontsho tše di tšhamang ditsela tše di ntšā tša tlanelo ka ditirelo mo teng ga bommasepala. Tšhupane ya Tšhamosešwa ya Bommasepala ya Tlanelo ka Ditirelo ke sedirisiwa sa tshedimose tšo le sa go dira tšhwetšo ya go thusa bommasepala go tokafatsa tlanelo ka ditirelo le go tla ka kgonego ya go nna le ditoropo tše tšhamosešwa mo isagweng.

Fa DSI e ne e batlana le ditsamaiso tša tšhamosešwa go tokafatsa tlanelo ka matlo e e tšhwarelelang lobaka lo lo leele, DSI e ne e tšhegetsā pontsho ya matlo e e neng e gatisitswe ya 3D ka go dirisiwa ga dithekenoloji tše go neng go okeditswe ka tsone tša go tšhama. Porintara ya 3D ya dikago e tile go lekelediwa e bile go tla dirwa pontsho e potlana ya yone ka go dirisana mmogo le Lefapha la Tlanelo ka Matlo la KwaZulu. Letsholo leno le ne la nonotshiwa ke Thulaganyo e e neng ya simololwa ya Saense, Thekenoloji le Tšhamosešwa ya Tlanelo ka Matlo e e Tšhwarelelang ka Seetebosigo 2021. Go simololwa ga thulaganyo eno go ne ga tšhama thulaganyo ya tšhamosešwa ya bana-le-seabe ba ba farologaneng ba setheo dingwaga di le 10 tše di tšang, go tšhegetsā Leano la Dingwaga di le Lesome.

Boikaelelo jwa tiriso ya kitso ka ajenda e e akaretsang botšhe ya tšhabololo ke go tšhegetsā tekeletšo ya ditšhamosešwa tša STI tša go lwantšha lehuma, go tšhama ditšhono tše di tšhwarelelang tša go tšhama ditiro, tlanelo ka matlo e e tšhwarelelang lobaka lo lo leele le go tokafatsa tlanelo ka ditirelo tša motheo. Tiro e e dirilweng ke DSI mo ntšheng eno e ne e tšhegetsā letsholo la puso la tlanelo e e kopantsweng ya ditirelo tša motheo tše di tla solegelang baagi fela ba ba tšhwarelelang molemo ba Aforikaborwa. Go na le kgonego ya gore ditiro tšeno di tšise metšwedi ya kgolo ya ikonometri, go tšhama mefuta e mesha ya ditirelo, le go tlanela ka ditirelo tše di amanang le ditharabololo tša tlhokomelo ya pholo, temothuto le metsi

Mo ngwageng ono wa go ntšha pego, Lenaneo la Tšhamosešwa ya Batho ba ba Tšhwarelelang fela (Grassroots Innovation Programme [GIP]) le ne la dira gore go fitšhelelwe dikemonokeng tša mefuta e e farologaneng tše di solegelang batho ba ba fetang 100 molemo. Tšhegetšo eno ya go gweba ka dikumo e ne ya solegela molemo baalogi ba ba santseng ba fatlhoga jaaka batsamaisi ba kgwebo ba ba nnang le seabe mo lenaneong leno.

DSI le ditšhe tša yone e ne ya akofisa go tšennngwa tširionng ga matsholo a a emang nokeng go gweba ka ditšhamosešwa tše di dirwang ke baša ba e leng batsamaisi ba dikgwebo ka GIP le ka Technology Acquisition and Deployment Fund,

e leng leano le le tšhametsweng go oketsa palo ya batho ba ba amogelwang mo lenaneong leno le go gweba ka dithekenoloji tše di tšhamilweng tša naga ya rona.

Puso e simolotše Lenaneo la gore Ditšhe Tše di Ikemetseng ka Nosi di Tšamele ka Metšwedi ya Tšhago ya Maatla a Motlakase gore go nne le ditlammo tše disha le maatla a tšhago a metšwedi ya motlakase mo tsamaisong ya bosetšhaba ya tlanelo ka motlakase. Ga jaanong jaana, mo e ka nnang 6 000 MW ya motlakase o o fetšhwang mo nageng yotšhe e dirwa ka dithekenoloji tša motlakase o o fetšhwang ke mogorte wa letsatsi wa photovoltaic (PV). Ditlammo di le pedi tša DSI tše di dirang dipelo di saenile tumalano e e kopantsweng ya go dirisa ditšhono tše motlakase o o fetšhwang ke metšwedi ya tšhago o tšang ka tsone. Seno se tla fitšhelelwa ka go tšweletsā pele ditirelo tša tsone tša go tlanela ka motlakase o o fetšhwang ke metšwedi ya tšhago le go lekeletsā mmojule wa PV mo lefelong la go fetšhwa ga motlakase.

Letsholo le lengwe la go fokotsa digase tše di ntšhediwang mo lefaufaug ke porojeke ya CoalCO2-X RDI, e boikaelelo jwa yone e leng go tšhama dithekenoloji tša go fokotsa digase tše di ntšhediwang mo lefaufaug tša dibobelara tše di tukisiwang ka magala mo diintasetering tša samente, maatla a motlakase, tšhipi, le tša go dira leokwane. Go tšhegetsā diintaseteri tšeno ga lefapha go tla di thusa go fokotsa ditlamorago tša Mokgwa wa Go Fetola Tuediso ya Dikumo Tša Khabone mo Melelwang.

Mo godimo ga moo, E amogetše Thulaganyo ya Aforika Borwa ya Haeterojene mo lobakeng lwa dingwaga di le 10 tše di tšang tša ditšhelete. Boikaelelo jwa thulaganyo eno ke go dira gore bana-le-seabe botšhe ba nne le mokgele o le mongwe fela wa ikonometri e e siameng ya tumalano ya go fokotsa thuthafalo ya lefatshe lotšhe ka 2050. Gape thulaganyo eno ke kgato e kgolo ya go tšhama ikonometri ya haeterojene ya lefatshe ka bophara le go etelela pele diphetogo tša enejii tša Aforika Borwa.

Ntlhakhgolo e nngwe ya 2021/22 e ne e le thulaganyo ya thotloetšo ya lenaneo la lekgetšo la R&D ya go kopa ditšhwaelo tša baagi ka maikuto a bone ka bomosola jwa thulaganyo eno le go tšhama dikarolo tša lone ka kgatiso e e tlotlang ka tokomane le ka patlisiso ya dipotšo tša patlisiso-maikutlo tša Lefapha la Bosetšhaba la Matlotlo la DSI. Ditšhwaelo tšeno tša bone di a dirisiwa jaanong, mmogo le tša intaseteri, go feleletsā tšhekatsheko ya pholisi ya karolo IID ya Molao wa Lekgetšo la Lotseno lwa Madi le dimametelelelo tše di dirwang mo go one, e bile go dira jalo go tšhomamisetsa ditšhe tša poraefete gore go na le thotloetšo ya lekgetšo la R&D.

DSI e tšweletsā ditherisano tša yone le baeteledipele ba saense mo lefatšheng lotšhe go tšweletsā pele dilo tše naga ya rona e di eteletsang kwa pele mo diforamong tše botšhe ba dumalaneng ka tsone. Ka ditšhono tša tširisanommogo fa gare ga dinaga tše pedi le badirisani mmogo ba

boditšhabatšhaba, Aforikaborwa e solegetswe molemo ke ditšhono di le 806 tsa tlhabololo ya dikgono-tiro tsa badiri, mme diphelelo tsa seno e ne e le go akarediwa ga dithuto tsa baithuti ba morago ga kalogo, metlotlo ya setegeniki ya go tshegetsa diteng tsa pholisi eno ya Lokwalopuso Lwa Mabudusatsela lwa STI.

Ntlhakgolo e e neng ya fitlhelwa ka nako ya ngwaga o go ntshiwang pego ka one e ne e le seabe se se botlhokwa sa Lefapha sa go dira gore Aforika Borwa e tshware lenaneo la Mokgatlo wa Lefatshe Lotlhe wa Pholo wa go lekelediwa ga bodirelo jwa mRNA.

Ka bodipolomate jwa saense, Lefapha le ne la tswela ka go etelela pele STI jaaka e e botlhokwa thata gore go tlhomiwe mogopolo mo go yone e re ka e le yone letsholo la tlhabololo ya lefatshe ka bophara, segolobogolo malebana le Mekgele e e Tshwarelelang ya Tlhabololo (Sustainable Development Goals [di SDG]). Phitlhelelo e e di fetang tsotlhe e ne e le memorantamo wa tumalano o o neng wa tselwa ke Lenaneo-Tlhabololo la Ditšhaba-Kopano (United Nations Development Programme [UNDP]) go tshegetsa tirisano mmogo ya matsholo a SDG a a tsentsweng tirisong le Lefapha. Go inakanya le ditlamo tse dingwe go tlametse ka tshedimosetso ya go nonotsha thibelo ya tirisodikgoka mo basading.

Lefapha, mmogo le European Union, le ne la tshegetsa dikgatotharabololo tse boikaelelo jwa tsone e leng go tlhama mokgwa wa go tswela pele ditsamaiso tsa naga ya rona tsa tlhamosešwa le tlhagiso-dikumo go tshegetsa ditlamo-potlana tsa tlhagiso ya leokwane mo metseselegaeng.

Ka go dirisana ka botlalo le Pan-African, Lefapha le ne la tshegetsa diporojeke tse di tsibogelang Ajenda ya 2063 ya African Union, go akaretsa le Leano-Tlhabololo le le Logetsweng Maano la Kgaolo ya SADC.

Ke leboga Mothusi Tona, Mokaedi-Kakaretso wa Saense le Tlhamo-Sešwa, badiri ba Lefapha, le ditheo tse ke di okametseng ka ntlha ya go nna le seabe ga bone mo diphitlhelelong tseno. Re tlhoka badirisani-mmogo le rona ba le bantsi mo NSI go tliša pharologano ka STI.



Ngaka BE Nzimande, MP

Tona ya Thutogodimo, Saense le Tlhamosešwa.

MAIPFI A MINISITA

Ndi khou takalela u vha divhadza Muvhigo wa rwaha wa Muhasho wa Saints na u bvededza mihumbulo miswa. Wonoyu muvhigo u sumbedza uri nga rwaha wa 2021/22 Muhasho wo tikedza zwavhuḁi *national system of innovation* kana ndila dza u bvededza mihumbuluo miswa ya thekinolodzhi u itela u swikelela zwipikwa zwa ndeme kha shango.

Saints, thekinolodzhi, na u bvededza mihumbulo miswa ya thekinolodzhi ndi zwithu zwa ndeme kha uri ikonomi i aluwe, fhedzi zwi thusa na kha muhasho wa mutakalo, wa pfunzo na wa zwifhaḁo. Pulane Ya U Bvededza Shango i sumbedza uri mashango ane a kona shumisa zwavhuḁi *Science*, thekinolodzhi, na u bvededza mihumbulo miswa ndi one ane a nga kona u lwa na vhushai zwavhuḁi.

Hu tshi khou shumiswa vhulivhisi ha *White Paper On Science*; *Saints*, thekinolodzhi, na u bvededza mihumbulo miswa (STI), uri Muhasho wa *Science na innovation* na zwiimiswa zwayo zwi khou shuma uri wonoyu muhasho na zwiñwe zwiimiswa zwi shumisane nga vhuthihi, vhathu vhanzhi vha kone u dzhenelela na uri hu itwe thoddisiso zwavhuḁi u itela uri mihumbulo miswa i bvededzwe nga hu leluwaho.

Zwipikwa zwa pulane ya Muhasho wa *Science na innovation* ya miñwaha ya fumi nazwozwi khou shumiswa u itela uri zwi konadzee u bvededza mihumbulo miswa na thandululo dza u ita uri tshumelo i kone u ya vhathuni hu tshi shumiswa *District Development Model* ine ya thusa uri hu vhe na tshumisano vhukati ha zwiimiswa, u isa tshumelo vhathuni na u sikwa ha mishumo.

Wonoyu muhasho wo bvela phanda u tshi thusa tshiimiswa tsha *national system of innovation* kana ndila dza u bvededza mihumbulo miswa ya thekinolodzhi ya u lwa na Covid-19. Wo tikedza mishumo minzhi u itela uri hu vhe na zwishumiswa zwa u tola Covid-19 zwi sa guriho, zwo leluwaho, nahone zwishumaho zwavhuḁi u itela u tola SARS-CoV-2 .

Hu na mvelaphanda yavhuḁi kha heli sia. Capebio i tshi shumisana na komiti *Scientific and Industrial Research* yo kona u bvededza tshishumiswa tsha u ita ndingo dza Covid-19 tshine tsha tshimbizana na maalfhele na mitshini ine ya khou shumiswa Afurika Tshipembe.

Tshiimiswa tshine tsha vhea mulayoni zwishumiswa zwa ngalafho (*South African Health Products Regulatory Authority*) tsho tendela uri hu shumiswe tshishumiswa tsha u ita ndingo dza Covid-19 tsho itwaho nga *Medical Diagnostech*, tshenetshi tshishumiswa tsho bvededzwa ho shumiswa masheleni a bvaho kha Muhasho wa *Science na innovation*. Tshenetshi tshishumiswa tshi dsa mvelele nga murahu ha minethe mivhili u ya kha ya 15 dza bvela henefho. A hu vhuyi ha toḁea mitshini na zwiñwe zwinzhi, fhedzi mvelele dzi a fhulufhelea

tshoṁhe. Tshishumiswa tshithithi a tshi pfuki na R50 u tshi bvededza kana u renga.

Ro ita nzudzanyo ya u shumisa mbekanyamushumo dza thekinolodzhi u itela uri ri thome u dilitela philisi fhano Afurika Tshipembe. Shango lashu li dilitika nga philisi dzibvaho kha mañwe mashango hezwi zwi ita uri ngalafho yashu i dure tshoṁhe. Afurika Tshipembe li shumisa masheleni a toḁaho u vha bilioni dza 15 nga rwaha li tshi khou renga zwithu zwa u ita philisi. Hu toḁea vhutsila u itela uri hu vhe na tshanduko yavhuḁi kha ikomi na u khwinisa vhutshilo ha vhathu, zwihulu kha vhathu vhane vho kandedzwa tshifhingani tsho fhirwaho. Muhasho u khou bvela phanda na u nea magavhelo nga ndila dzo fhambanaho u itela u thusa uri dzi Yunivesithi dzine kone u ita thoddisiso u katela na *South African Research Chairs Initiative* na *the Centres of Excellence Programme*.

Ho nekedzwa magavhelo manzhi nga tshino tshifhinga, u katela magavhelo a 3 201 a u thusa kha u ita dzi thoddisiso nga mbekanyamushumo dzi langwaho nga *National Research Foundation*. Hezwi zwo ita uri hu gandiswe khandiso (mabambiri) a fhiraho 9 116 o redzawo kha *Web of Science*.

Ndi zwa ndeme nga maanda uri hu vhe na masheleni ane a anga thusa kha u bvededza vhutsila na ndivho zwine zwa nga shumisiwa u itela u alusa ikonomi ya shango. Nga uno rwaha wa muvhalelano, Muhasho na zwiimiswa zwine wa zwi shumisa wo shumisa masheleni u itela u thusa vhagudiswa vha 8 170 vhane vha khou isa phanda na pfunzo ya nṁha na u thusa vha 1 194 vho no thaphudzaho digiri dzavho u katela na vhe vha gudiswa mishumo.

Hu na mvelaphanda yavhuḁi kha u shumisa thekinolodzhi u itela u thusa miñwe mihasho uri i shumise maitele a tshi zwino zwino a u ita zwithu nga ndila ya khwine.

Muhasho wo shumisa SANSA u itela u bvededza zwithu zwine zwi nga thusa nga maanda kha u dzhia phetho nga u ita uri hu swikelelwe mafhungo a re tshifhingani, mimapa i sumbedza zwidodombedza zwa shango, sa tsumbo, fhethu hune vhathu vha dzula hone, fhethu hu re na maḁi. Hezwi zwi thusa u dzudzanya u isa tshumelo vhathuni, na u iledza u nea vhathu vhudzulo fhethu hure na khombo ya u vha na midalo. Zwiñwe hafhu, hu na ndila ntswa dzine masipala ya nga dzi shumisa u itela u vhuyedza vhadzulapo. *The Municipal Innovation Maturity Index* ndi tshishumiswa tshi re na mafhungo a thusaho kha u ita phetho u itela u thusa mimasipala uri i kone u isa tshumelo vhathuni nga ndila ya khwine nahone zwi do ita uri hu vhe na dorobo dza khwine tshifhingani tshidaho.

Muhasho wo tikedza fulo la u fhaḁa nṁdu dzine zwithu zwinzhi zwi vha zwo no fhaḁa, ho tou sala u sokou

tuma nndu ya vha yo fhela. Zwenezwi zwi do thomiwa nga zwiituku, Mhasho u tshi khou shumisana Mhasho Wa Vhudzulo Ha Vhathu wa KwaZulu-Natal. Hezwi zwo konadzea nga nthani ha u rwelwa tari ha pulane ya fulo la saintsi, thekinolodzhi na u bveledza mihumbulo miswa u itela u thusa vhathu uri vha dzule fhethu ha khwine ya nwedzi wa June 2021. Zwiimiswa zwinzhi zwo shela mulenzhe uri yeneyi pulane i vhe hone nahone i do thusa lwa miwaha ya fumi i daho.

Tshipikwa tsha yeneyi pulane ya u shumisa ndivho yo teaho ndi u tikedza saintsi, thekinolodzhi na u bveledza ha mihumbulo miswa u itela u lwa na vhusai, u sika mishumo na u ita uri vhathu vha dzule fhethu ha khwine na uri tshumelo i kone u swika vhathuni. Mhasho wo tikedza muvhuso kha heli sia u itela uri zwi lelutshela muvhuso u isa tshumelo vhathuni kha vhadzulapo vhothe. Zwenezwi zwi nga ita uri ikonomi i aluwe tshfningani tshidaho, u sikwa ha miwe muishumo miswa na u tandulula thaidzo dza zwa ngafho, vhumili na u fuwa, na tshumelo dza maqi.

Nga uno nwaha wa 2021/22 mbekanyamushumo ya Grassroots Innovation yo thusa vhathu vha phadzaho 100, vho thaphudzaho pfunzo dzavho, vho kona u di thomela mabindu avho nga thuso ya yeneyi mbekanyamushumo.

Mhasho na zwiimiswa zwayo wo thusa nga maanda uri mihumbulo miswa ine vho ramabindu vha re vhaswa vha vha nayo i kone u bveledza hu tshi shumiswa masheleni a *Technology Acquisition and Deployment Fund*, u itela uri thekinolodzhi ine ya bveledza fhano i kone u shuma zwavhudi kha u alusa ikonomi.

Muvhuso wo thoma mbekanyamushumo ya *Renewable Energy Independent Power Producer* u itela uri uri na zwiwe zwiimiswa u katela na vhathu vha shele mulenzhe na u bveledza mudagasi u si na khombo kha mupo. Zwa zwino hu bveledza mudagasi u linganaho megawatts dza 6 000 hu tshi shumiswa thekinolodzhi ya u shumisa masana a duvha. Khampani mbili dzi shumisanaho na Mhasho dzo saina thendelano ya u shumisa zwickhala zwi re hone zwa u toda ndila dza khwine dza u ita mudagasi. Zwi do konadzea nga u khwinisa u khwinisa ndila ya u ita mudagasi ri tshi shumisa masana a duvha.

Inwe ndila ya u tsireledza mupo hu tshi itwa mudagasi i do konadzea nga mbekanyamushumo ya CoalCO₂-X RDI, ine ya bveledza thekinolodzhi ya u fhungudza tshinyalelo i fhangangwaho nga u fhiswa ha malasha kha feme na zwiimiswa zwo fhambanaho. Mhasho u do tikedza nga maanda zwenezwi zwiimiswa u itela u fhungudza u tshinyadzwa ha mupo zwi vhangwaho nga u fhiswa malasha.

Khabinethe yo rwela tari the *Hydrogen South Africa Roadmap* lwa miwaha ya fumi. Yeneyi nzudzanyo yo

itelwa u thusa uri zwiimiswa zwine zwa shuma nga zwa mudagasi swi shumisane u ita u swikelela tshipikwa tshithi tsha ikonomi ya vhuimo havhudi i vhuvedzaho vhathu vhothe nga 2050.

Tshiwe tshithu tshi takadzaho kha uno nwaha wa 2021/22 ndi mbekanyamushumo ya R&D tax incentive ya u ita uri vhadzulapo vha ambe mavhonele avho. Enea mavhonele a khou shumiswa u itela u vusulusa mulayo wa Income Tax, section 11D, zwi do thusa na zwiimiswa zwi si zwa Muvhuso.

Mhasho u khou bvela phanda na u shumisana vharangaphanda vha saintsi vha shango lothe u itela u vhuvedzam Afurika Tshipembe kha masia manzhi. Nga yeneyi ndila Afurika Tshipembe lo kona u thusa vhadzulapo vha 806 na nga zwithu zwi ngaho u thaphudza pfunzop dza ntha na vhuwe vhuhsila u itela u tikedza zwipikwa zwa White Paper ya Saintsi, thekinolodzhi na u bveledza mihumbulo miswa.

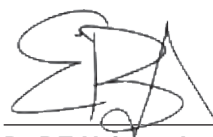
Tshiwe tshithu tsha ndeme tsho swikelelwaho tsho swikelelwaho nga uno nwaha wa tshumelo ndi uri mhasho wo kona u ita iri Afurika Tshipembe li fhafe feme ya u ita na u tola mihayelo ya mRNA ya Dzangano La Zwa Mutakalo La Lifhasi.

Mhasho wo shumisa saintsi itela u bveledza zwipikwa zwa saintsi, thekinolodzhi na u bveledza mihumbulo miswa sa yone ndila ya khwine ya u tandulula thaidzo dza vhadzulapo. Tshithu tshi swaeaho ndi thendelano ya mbekanyamushumo ya United Nations ya u tikedza zwipikwa zwa Mhasho. U shumisana na zwiwe zwiimiswa zwo thusa uri hu divhiwe zwavhudi tshivhalo tsha khakhathi dza u tambudzwa ha mbeu.

Mhasho wo shumisana na *European Union* u itela u thusa u bveledza mihumbulo na u thusa vhane vha bveledza mapfura a bvaho kha miri vha vhuponi ha mahayani.

Mhasho u khou shuma vhukuma u itela u tikedza zwipikwa zwa African Union na nzudzanyo ya SADC ya u khwinisa ikonomi na mveledziso.

Ndi khou livhuwa Muthusa Minisita, Mulanguli wa Saintsi na *Innovation*, vhashumi vha Mhasho na zwiimiswa zwothe zwi shumaho na nge, ndi khou livhuwa zwothe zwe vha khunyeledza. Ri khou toda uri vhanzhi vha shele mulenzhe nga u shumisa eneya maitele.



Dr BE Nzimande, MP

Minisita wa Pfunzo ya Ntha, Saintsi na u Thoma Zwithu Zwiswa

STATEMENT BY THE DEPUTY MINISTER



Mr KB Manamela, MP
Deputy Minister of Higher Education,
Science and Innovation

In the period under review, the Department of Science and Innovation (DSI) continued its efforts to use science, technology and innovation (STI) in support of the Economic Recovery and Reconstruction Programme and other national priorities. These priorities include building a capable, ethical and developmental state, economic transformation and job creation, education and skills, health, consolidating the social wage through reliable and quality basic services, spatial integration, human settlements and local government, social cohesion and safe communities, and a better Africa and world.

As part of our efforts to increase the use of innovation as an enabler in the delivery of efficient services and access to government programmes, the DSI implemented several interventions aimed at supporting the building of a skilled government workforce to advance a transformative and developmental agenda.

Through the South African National Space Agency (SANSA), the DSI appointed a contractor who commenced with the construction of the 24/7 Space Weather Centre, one of the International Space Environment Service's 17 regional warning centres worldwide. SANSA appointed four new space weather forecasters, all of whom were black female graduates with a background in meteorology or physics, and who were unemployed at the time of receiving the SANSA offer. This represents a direct contribution to addressing the issues of unemployment and transformation.

We invested in the Seed Fund Programme of our entity, the Technology Innovation Agency, to de-risk early stage innovation ideas and technologies from public research

institutions (universities and science councils) and SMMEs to improve the probability of commercialising South African technologies.

Through a bridging model, this Seed Fund also seeks to address the need for small amounts of early stage funding to researchers at higher education institutions, for the purpose of advancing their research outputs and ideas to proof of concept, prototype development, demonstration and business case stages, enabling them to attract further investment.

To strengthen the use of indigenous knowledge systems for innovation, the DSI and North-West University launched the Indigenous Knowledge Registration System in March 2022. This system will be used to enable social cohesion along with the growth of an inclusive economy, in line with the National Development Plan and the key provisions of the Protection, Promotion, Development and Management of Indigenous Knowledge Act, 2019.

Also in March this year, the Cabinet approved that the Indigenous Knowledge Regulations be gazetted for public consultation. We will be working on the publication of the Regulations during the 2022/23 financial year.

The Indigenous Knowledge-Based Bioinnovation Institute Framework has been approved for consultation during the 2022/23 financial year. The institute is intended to consolidate and institutionalise various IK knowledge production and utilisation initiatives under one roof.

Other support in the area of bioinnovation is provided to SMMEs through the Strategic Industrial Bioinnovation

Partnership Programme, which led to five developed products being commercialised for sale in South Africa in the year under review. These products include two nanobodies (anti-human nanobodies CD9 and CD63) and three lignin-based products (organic hand wash, soda lignin powder and an extraction formulation).

As part of DSI efforts to revitalise the agricultural sector, a total of R73,4 million was leveraged from the private sector, including funding from the grain and oilseed industries.

In terms of food and nutrition security, the nixtamalisation training initiative had good uptake in the Eastern Cape with a group of women trained under the Women in Agriculture and Rural Development structure in Qumbu, which received baking equipment from the Eastern Cape Department of Rural Development and Agrarian Reform to establish an enterprise and use nixtamalisation as a source of income.

Regarding agroprocessing in rural communities and farmer development support, 845 black emerging farmers benefited from the Agricultural Bioeconomy Innovation Partnership Programme (ABIPP). This included 701 farmers in the Ukhanyo Farmer Development support programme who received training in financial literacy and nixtamalisation through various study groups in the Eastern Cape, grouped according to municipalities.

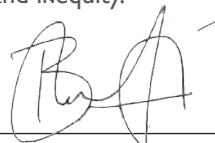
Of the beneficiaries, 80% were women and, of the women trained, 20% were young women. Of the total of 845 farmers who received support in the form of training, 22 received training in the processing of aloe and 16 received support under the honeybush programme. Ninety-nine farmers received training in, among other areas,

agroprocessing, plant health surveys, diagnostic surveys and seed business development under the innovation partnership for grains and oilseeds. In addition, seven farmers were trained under the cosmeceuticals platform. Rural smallholder farmers have been equipped with skills and knowledge that they are able to use to improve their lives and derive incomes.

As part of modernising agriculture and supporting interventions for diagnostics, surveillance, monitoring and early warning systems, ABIPP funded the development of a digital platform at the University of Pretoria to support the piloting of tools and technologies, such as early warning systems to assist government and producers. Once the pilots have been completed, small-scale and developing producers will be trained to use these biosecurity tools to assist with the early detection of biosecurity threats in the grain value chain.

These are just some of the Department's performance highlights for the period under review and they would not have been possible without the hard work and dedication of the staff in our Department and our entities.

We appreciate the leadership of the Minister in ensuring that we place science, technology and innovation at the centre of government's efforts to re-energise our economy and strengthen our fight against poverty, unemployment and inequity.



Mr KB Manamela, MP

Deputy Minister of Higher Education, Science and Innovation

ISITATIMENDE SEPHINI LIKANGQONGQOSHE

Phakathi nale nkathi ebuyekezwayo, uMnyango Wezesayensi Nokusungula Izinto Ezintsha (i-DSI) uqhubekile nemizamo yawo yokusebenzisa isayensi, ubuchwepheshe nokusungula izinto ezintsha (i-STI) ukuze weseke uHlelo Lokuvuselela Nokwakha Kabusha Umnotho kanye nezinye izinto eziseqhulwini kuzwelonke.

Lezi zinto eziseqhulwini zibandakanya ukwakha umbuso onamandla, onemithetho yokuziphatha futhi othuthukayo, uguquko kwezomnotho nokudalwa kwamathuba emisebenzi, imfundo namakhono, ezempilo, ukuhlanganisa iholo lezenhlalakahle ngokusebenzisa izinsiza eziyisisekelo ezingethenjwa nezisezingeni eliphezulu, ukudidiyelwa kwezindawo zomhlaba, ukuhlaliswa kwabantu kanye nohulumeni basekhaya, ukubumbana komphakathi nemiphakathi ephephile, kanye ne-Afrika nomhlaba ongono.

Emizamweni yethu yokwandisa ukusetshenziswa kwamakhono okusungula izinto ezintsha njengasiza ekulethweni kwezidingongqangi kanye nokufinyelela ezinhlelweni zikahulumeni, i-DSI iqalise izindlela eziningana okuhloswe ngazo ukweseka ukucija abasebenzi bakahulumeni ngamakhono ukuze kuqhutshekwe nenhloso yezingquko nentuthuko.

Ngokusebenzisa i-South African National Space Agency (i-SANSA), i-DSI iqoke usonkontileka owaqala ukwakha i-24/7 Space Weather Centre, engesinye sezikhungo zezexwayiso zakulesi sifunda ezingu-17 ze-International Space Environment Service. I-SANSA iqoke ababikezeli bezulu abasha abane, bonke okungabantu besifazane abamnyama abaneziqu ze-meteorology noma i-physics, futhi ababengaqashiwe ngesikhathi beqashwa yi-SANSA.

Lokhu kuyigalelo eliqondile ekubhekaneni nezinkinga zokuntuleka kwemisebenzi noguquko.

Sitshale imali ohlelweni lwethu lwe-Seed Fund Programme, okuyi-Technology Innovation Agency, ukuze sisheshe sikwazi ukunqanda izingozi zezinto ezintsha ezisungulwayo kanye nezobuchwepheshe konke okuvela ezikhungweni zomphakathi zokucwaninga (amanyuvesi nemikhandlu yesayensi) kanye nama-SMME ukuze kuthuthukiswe amathuba okudayisa ezobuchwepheshe ezenziwe eNingizimu Afrika.

Ngalolu hlelo lwe-Seed Fund, sifuna nokubhekana nesidingo semali encane yokushesha ukuxhasa abacwaningi abasezikhungweni zemfundo ephakeme, ngenjongo yokuthuthukisa imiphumela yocwaningo lwabo nemibono yabo ibe ubufakazi bento ephusile, ukuthuthukiswa kwento engokoqobo, izethulo kanye nezigaba zebhizinisi, okubenza bakwazi ukudonsa ukutshalomali olwengeziwe.

Ukuze kuqiniseke ukusetshenziswa kwezinhlelo zolwazi lwendabuko ekusunguleni izinto ezintsha, i-DSI kanye neNyuvesi Yase-North West bethula uHlelo Lokubhaliswa Kolwazi Lwendabuko ngoMashi 2022. Lolu hlelo luzosetshenziselwa ukwenza ubumbano emphakathini nokukhulisa umnotho obandakanya wonke umuntu, ngokuhambisana nohlelo lwe-National Development Plan kanye nezinhlinzeko ezibalulekile zoMthetho Wokuvikela, Ukukhuthazwa, Ukuthuthukiswa Nokuphathwa Kolwazi Lwendabuko, Ka-2019.

Ngawo futhi uMashi kulo nyaka, iKhabhinethi yagunyaza ukuba iMithethonqubo Yolwazi Lwendabuko ifakwe kusomqulu ukuze kuboniswane ngayo nomphakathi. Sizosebenzela ekushicilelweni kwaleyo Mithethonqubo ngonyaka wezimali ka-2022/23.

Uhlaka Lwesikhungo Se-Bioinnovation Esisekelwe Olwazini Lwendabulo selugunyaziwe ukuba kuboniswane ngalo ngonyaka wezimali ka-2022/23. Ngalesi sikhungo kuhloswe ukudidiyela nokuhlanganisa izinhlelo ezihlukahlukene zokukhiqiza nokusetshenziswa kolwazi lwendabuko ngaphansi kohlaka olulodwa.

Okunye ukwesekwa endabeni ye-bioinnovation kunikezwa ama-SMME ngohlelo lwe-Strategic Industrial Bioinnovation Partnership Programme, oluholele ekutheni imikhiqizo emihlanu emisha idayiswe eNingizimu Afrika kulo nyaka obuyekwayo. Le mikhiqizo ibandakanya amanobodies amabili (ama-anti-human antibodies CD9 ne-CD63) kanye nemikhiqizo emithathu esekelwe kuyi-lignin (okokugeza izandla okungathakiwe, uphawoda we-soda lignin kanye ne-extraction formulation).

Emizamweni ye-DSI yokuvuselela umkhakha wezolimo, kutholwe isamba sika-R73,4 wezigidi ezinkampanini ezizimele, okubandakanya noxhaso lwezimboni zokudla okusanhlamvu nezimbewu zokwenza amafutha.

Mayelana nokuvikeleka kokudla kanye nokudla okunomsoco, uhlelo lokuqeqeshelwa i-nixtamalisation lube nomthelela omuhle e-Eastern Cape eqenjini labesifazane abaqeqeshwe ngaphansi kohlaka lwe-Women in Agriculture and Rural Development kwaQumbu, elathola imishini yokubhaka eMnyangweni wase-Eastern Cape we- Rural Development and Agrarian Reform ukuze basungule ibhizinisi nokusebenzisa i-nixtamalisation njengomthombo wemali.

Mayelana nokucutshungulwa kwezolimo emiphakathini yasemaphandleni nokwesekwa kokuthuthukiswa kwabalimi, bangu-845 abalimi abamnyama abasafufusa abahlomule ohlelweni lwe-Agricultural Bioeconomy Innovation Partnership Programme. Lokhu kubandakanya abalimi abangu-701 ohlelweni lokweseka lwe-Ukhanyo

Farmer Development abathole ukuqeqeshwa ekuphatheni izimali nakuyi-nixtamalisation ngamaqembu ocwaningo ahluken e-Eastern Cape, aqoqwe ngokomasipala.

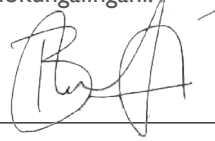
Kwabahlomulile, u-80% ngabesifazane kanti, kwabesifazane abaqeqeshiwe, u-20% ngabesifazane abasebasha. Kubo bonke abalimi abangu-845 abathole ukwesekwa ngokuqeqeshwa, abangu-22 bathole ukuqeqeshwa ekugayweni kwenhlaba kwathi abangu-16 bathola ukwesekwa ngaphansi kohlelo lwe-honeybush. Abalimi abangamashumi ayisishiyagalolunye nesishiyagalolunye bathole ukuqeqeshwa, phakathi kwezinye izinto, ekugayeni izitshalo, ukuhlola impilo yezitshalo, ukuhlelela ukuhlonza nokuthuthukiswa kwebhizinisi lembewu ngaphansi kobudlelwano bokusungula mayelana nokudla okusanhlamvu nembewu yokwenza amafutha. Ngaphezu kwalokho, abalimi abayisikhombisa baqeqeshwa kweze-cosmeceuticals. Abalimi abasafufusa basemaphandleni bahlonyiswe ngamakhono nolwazi abakwazi ukulusebenzisela ukwenza ngcono izimpilo zabo, bathole nemali.

Njengengxenywe yokwenza ezolimo zibe ngezesimanjemanje kanye nokweseka imizamo yokuhlonza, ukugada, ukuqapha kanye nezinhlelo zokuxwayisa kusenesikhathi, i-ABIPP ixhase ngezimali ukuthuthukiswa kwedijithali eNyuvesi

YasePitoli ukuze kwesekwe ukuhlolwa kwamathuluzi nobuchwepheshe, njengezinhlelo zokuxwayisa kusenesikhathi ukusiza uhulumeni nabakhiqizi. Lapho lokhu kuhlola sekuphuthuliwe, abakhiqizi abancane nabathuthukayo bazoqeqeshelwa ukusebenzisa la mathuluzi e-biosecurity ukusiza ekutholeni kusenesikhathi izinsongo ze-biosecurity maqondana nokudla okusanhlamvu.

Lokhu kungeminye yemisebenzi evelele yoMnyango kule nkathi ebuyekezwayo futhi bekungeke kwenzeke ngaphandle kokusebenza kanzima nokuzinikela kwabasebenzi boMnyango wethu nezinhlelo zethu.

Siyabuthokozela ubuholi bukaNgqongqoshe ekuqinisekiseni ukuthi sibeka eqhulwini isayensi, ubuchwepheshe kanye nokusungula izinto ezintsha emizamweni kahulumeni yokuvuselela umnotho wethu futhi kuqinisa impi yethu yokulwa nobubha, ukuntuleka kwemisebenzi kanye nokungalingani.



UMnu KB Manamela, MP

IPhini LikaNgqongqoshe Wezemfundo Ephakeme, Isayensi
Nokusungula Izinto Ezintsha

PUO YA GA MOTHUSA-TONA

Mo lobakeng lwa go ntshiwa ga pego ya rona, Lefapha la Saense le Tlhabololo (Department of Science and Innovation [DSI]) le ne la tswetsa pele maiteko a lone a go dirisa saense, thekenoloji le tlhamosešwa (science, technology and innovation +[STI]) go tshegetsa Lenaneo la Tsosoloso ya Ikonomi le Kago Sesha le dilo tse dingwe tsa bosetšhaba tse di tlhokang go etelediwa kwa pele.

Dilo tseno tse di tlhokang go etelediwa kwa pele di akaretsa go aga puso e e nang le bokgoni, ya tsamaiso-sentle le tlhabololo, phetogo ya ikonomi le go tlhama ditiro, thuto le dikgono-tiro, pholo, go kopanya ditirelo tsa botlhokwa tsa setšhaba ka go se tlamela ka ditirelo tse di sa kgaotseng tsa boleng jo bo kwa godimo, go kopanya mafatshe a a bulegileng, tlamelo ka matlo le pusoselegae, go momaganya setšhaba le mafelo a a sireletsegileng a baagi, le Aforika e e botoka le lefatshe le le botoka.

Mangwe a maiteko a rona a go dirisa tlhamosešwa gore re thuse go tlamela ka ditirelo tse di mosola le go fitlhelela mananeo a puso, DSI e ne ya tla ka dikgatotharabololo di le mmalwa tse boikaelelo jwa tsone e leng go tlhabolola dikgono-tiro tsa badiredi ba puso gore ba tswetse pele ajenda ya go tlisa diphetogo le tlhabololo.

Ka South African National Space Agency (SANSA), DSI e tlhomile konteraka e e neng ya simolola ka kago ya Senthara ya Maemo a Tsa Bosa e e dirang 24/7, e leng nngwe ya Disenthara di le 17 mo lefatsheng lotlhe ya Ditirelo Tsa Bodišhabatšhaba Tsa Maemo Kwa Lefaufaung. SANSA e ne ya tlhoma ba polelelopele ya maemo a bosa ba le bane, botlhe e ne e le baalogi ba basadi ba bantsho bao ba ithutetseng maemo a bosa kgotsa fisika, bao ba neng ba sa bereke ka nako ya fa SANSA e ne e batla go ba thapa.

Seno ke kgato ya ka tlhamalalo ya go rarabolola mathata a botlhokatiro le go tlisa diphetogo.

Re ne ra dira maiteko a Lenaneo la Letlole la Go Simolola Tiro mo setheong sa rona, e leng Setheo sa Thekenoloji sa Tlhamosešwa, go fokotsa bomasisi jwa dikgopolo tsa tlhamosešwa tsa go sa le gale le dithekenoloji go tswa go ditheo tsa patlisiso tsa puso (makgotla a yunibesiti le a saense) le di SMME go tokafatsa kgonego ya go gweba ka dithekenoloji tsa Aforikaborwa.

Ka mokgwa wa go tswala sekgala, boikaelelo jwa Letlole leno la go Simolola Tiro gape ke go thusa babatlisisi ba ba leng kwa ditheong tsa thutogodimo ka thusonyana ya madi, ka boikaelelo jwa go tswetsa pele dipholo tsa bone tsa patlisiso le dikgopolo tsa go ntsha bosupi jwa kgopolo ya bone, go tlhabolola kgopolo ya bone, go dira pontsho le mabaka a dikgato tsa kgwebo ya bone, a a ba thusang go goka dipeeletsomadi go ya pele.

Go nonotsha tiriso ya ditsamaiso tsa kitso ya setso ya tlhamosešwa, DSI le Yunibesiti ya Bokone-Bophirima di ne tsa simolola Porokeramo ya Go Ikwadisetša Kitso ya Setso ka Mopitlwe 2022. Tsamaiso eno e tla dirisediwa kgonego ya go momaganya setšhaba le kgolo ya ikonomi e e akaretsang botlhe, tumalanong le Leanotlhabololo la Bosetšhaba le ditaello tsa konokono tsa Tshireletso, Thotloetso, Tlhabololo le Tsamaiso ya Molao wa Kitso ya Setso, wa ka 2019.

Gape ka Mopitlwe wa one ngwaga o, Kabinete e ne ya dumela gore Melawana ya Kitso ya Setso e kwale mo kaseteng ya puso e le tsela ya go ikgolaganya le maloko a setšhaba. Re tlile go kwala kgatiso ya Melawana eno ka ngwaga wa ditšhelete wa 2022/23.

Thulaganyo ya Setheo ya Patlisiso le Tlhamosešwa e robetswe gore go ka ikgolaganngwa le maloko a setšhaba ka ngwaga wa ditšhelete wa 2022/23. Setheo se ikaeletswe go kopanya le go dira gore tlhagiso ya mefuta e e farologaneng ya kitso ya IK e nne ya setheo le go dirisa matsholo mo lefelong le le lengwe.

Tshegetso e nngwe ya patlisiso le tlhamosešwa e newa di SMME ka Lenaneo le le Logetsweng Maano la Tirisanommogo ya Diintaseteri la Patlisiso le Tlhamosešwa, mme e ne ya felela ka go tlhamiwa ga dikumo di le tlhano tse go neng ga gwebiwa ka tsone gore di rekisiwe mo Aforikaborwa ka ngwaga wa go ntsha pego. Dikumo tseno di akaretsa dire tse pedi tse di tlhamang dilwantshatwatsi (dilwantsha-twatsi tse e seng tsa batho tsa CD9 le CD63) le dire di le tharo tse di nonotshang bokafateng jwa disele tsa semela (go di tlhatswa ka seatla, poere ya soda e e nonotshang bokafateng jwa disele tsa semela le fomula ya go tsaya poere eo).

Mangwe a maiteko a DSI a go tsosolosa setheo sa temothuo, setheo sa poraefete se ne sa aba R73,4 milione, go akaretsa le tshegetso ka madi go tswa kwa diintasetering tsa dijo tsa dithoro le tsa dimela tse di tlhagisang peo.

Malebana le dijo le go se tlhaele ga dijo tse di nang le dikotla, letsholo la katiso ya go photha mmopo le ne la nna le batho ba le bantsi sentle kwa Kapa Botlhaba mme mo go lone letsholo leo, setlhopho sa basadi se ne sa katisiwa ke lefapha la Basadi mo Tirong ya Temothuo le Tlhabololo ya Metseselegae kwa Qumbu, le le neng le amogela didirisiwa tsa go baka dikuku go tswa go Lefapha la Tlhabololo ya Metseselega le Go busediwa ga Masimo go Beng ba One gore ba tlhomea dikgwebo tsa bone le tiriso ya go photha mmopo jaaka lotseno lwa madi.

Malebana le go tlhotlha tiro ya temothuo kwa metseselegaeng le kemonokeng ya tlhabololo ya dikgono-tiro tsa balemi, balemirui ba bantsho ba le 845 ba ba

santseng ba fatlhoga ba ne ba solegelwa molemo ke Lenaneo la Tirisanommogo la Tlhamosešwa ya Temothuo ya go Dira Dikumo ka Dimela. Ba akaretsa balemirui ba le 701 ba ba leng mo lenaneong la kemonokeng la Tlhabololo ya Dikgono-Tiro tsa Balemirui ba Ukhanyo ba ba neng ba katisediwa go nna le kitso ya go dira ka madi le katiso ya go photha mmopo ka ditlhophha tse di farologaneng tsa go ithuta kwa Kapa Botlhaba, ba beilwe ka ditlhophha go ya kabommasepala.

Mo go ba ba solegetsweng molemo, 80% ya bone ke basadi mme, mo basading ba ba katisitsweng, 20% ya bone e ne e le basadi ba ba botlana. Mo palogotlheng ya balemirui ba le 845 ba ba neng ba newa kemonokeng ka go katisiwa, ba le 22 ba ne ba katisediwa go dira ka dimela tsa mokgopha (aloe) mme ba le 16 ba newa kemonokeng ka lenaneothuto la honeybush. Go katisitswe balemirui ba le masomearobonngwe le borobonngwe, mme dilo dingwe tse ba di katiseditsweng ke go dira tiro ya temothuto, go dira patlisiso ka dimela tse di bakang pholo, dipatlisiso tsa go sekaseka bothata le kgwebo ya go godisa peo ka tirisanommogo ya tlhamosešwa ya dijo tsa dithoro le ya dimela tse di tlhagisang peo. Mo godimo ga moo, balemirui ba le supa ba ne ba katisediwa dilo tse dingwe tse di amanang le bone fela. Balemirui ba metseselegae ba dikgwebopotlana ba rutilwe dikgono-tiro le go newa kitso e ba ka kgonang go e dirisa go tokafatsa matshelo a bone le go nna le lotseno lwa madi.

Jaaka tsela ya go tlhabolola ya temothuto le e nne tiro ya segompiano le dikgatotharabololo tsa tshekatsheko ya bothata, go disa, go baya maemo leitlho le didirisiwa tse di ntshang tlhagiso go sa le gale, ABIPP e ne ya tshegetsa ka madi go tlhamiwa ga polatefomo ya dijethale le dithekenoloji, jaaka didirisiwa tse di ntshang tlhagiso go sa le gale go thusa puso le batlhagisi ba dikumo. Fa ditekeletso di sena go konelwa, batlhagisa-dikumo ba ba santseng ba fatlhoga le ba ba gatetseng pele ba tla katisediwa go dirisa didirisiwa tseno tsa tshireletso ya dimela go ba thusa go lemoga bothata mo dimeleng tse e leng tlhagiso-dikumo.

Tseno ke dingwe tsa dintlhakgolo tsa ditiro tse Lefapha le di dirileng mo lobakeng lwa go ntsha pego mme di ka bo di sa kgonaga fa e ka bo e ne e se ka ntlha ya boineelo le tiro ya ka natla ya badiri ba Lefapha le ditheo tsa rona.

Re itumelela boeteledipele jwa ga Tona jwa go tlhomamisa gore re baya saense, thekenoloji le tlhamosešwa jaaka dilo tsa konokono mo tirong ya puso ya go tsoolosa ikonomi ya rona le go nonotsha ntwaga ya rona kgalhanong le lehuma, botlhokatiro le botlhoka tekatekano.



Rre KB Manamela, MP

Mothusa Tona ya Thutogodimo, Saense le Tlhamosešwa.

TSHIPITSHI TSHA MUTHUSA MINISITA

Nga uno n̄waha wa muvhalelano, Muhasho wa Saints na Innovation wo bvela phanda u shumisa saints, thekinolodzhi na u bveledza mihumbulo miswa u itela u thusa mbekanyamishumo ya u vusulusa na u fhatulula ikonomi na zwiñwe zwipikwa zwa shango.

Zwenezwi zwipikwa zwi katela u fhatu shango li re na mishumo, pfunzo, tshumelo ya vhuḁi vhatshuni, vhudzulo ha vhatshu, fhethu ho tsireledzeaho, vhuḁsila, u shumisana na u khwinisa dzhangano la Afurika na Shango lothe nga vphuphara. Muhasho wo ita mbekanyamishumo dzo vhalaho u itela u tikedza muvhuso uri u vhe na vhashumi vha re na vhuḁsila u itela lu khwinifhadza na u maangafhadza kushumele kwa muvhuso. Muhasho wo thola khamphani ya u fhatu fhethu ha mvumbamutsho hune ha do shuma duvha na duvha, tshifhinga tshothe. South African National Space Agency yo thola vhafumakadzi vhaḁa vha vharema vha re na tshenzhemo vho thapudzaho pfunzo dzavho, vho tholwa uri vha shume kha zwa mvumbamutsho.

Hezwi zwi do thusa u fhedza thahalelo ya mishumo na u bveledza shango. Ro ita nzudzanyo dza uri ri zwi konadzee nga hu leluwaho na tshikhala tshavhuḁi tsha u bveledza mihumbululo miswa ibvaho kha zwiimiswa zwa u ita thodisiso (Dzi yunivesithi na komiti dza saints) na kha mabinndu matuku.

Yeneyi nzudzanyo i do thusa na kha masheleni a todeaho uri hu thomiwe thodisiso kha magudedzi a pfunzo dza nthu u itela uri zwi khwinifhadzee tshothe u itela u wana na mañwe masheleni ane a todea.

Muhasho na yunivesithi ya North West wo thoma mbekanyamushumo ya u shumisa ndivho ine vhatshu vha vha nayo nga n̄wedzi wa Thammuhwe 2022. Yeneyi mbekanyamushumo i do thusa uri vhatshu vhanzhi vha kone u shela mulenzhe nahone i tshimbidzana na mulayo wa Protection, Promotion, Development and Management of Indigenous Knowledge Act, 2019.

Zwiñwe hafhu, nga March ya uno n̄waha khabinethe yo tendela uri milayo i langaho ndivho ine vhatshu vha vha nayo i dzudzanywe uri vhatshu vha ambe mavhonele avho. Zwenezwo zwi do shumiswa nga nzudzanyo dza n̄waha wa 2022/23 wa tshumelo. Mashumele a tshiimiswa tsha Indigenous Knowledge-Based Bioinnovation a do shumiswa nga n̄waha wa 2022/23. Tshenetshi tshiimiswa tshi toda u kuvhangana fhethu huthihi ndivho ine vhatshu vha vha nayo. Hu na mbekanyamushumo ya u thusa mabinndu matuku, hezwi zwo thusa u ri hu vhe na zwibveledzwa zwiñanu zwine zwa vho rengiswa Afurika Tshipembe. Ho shumiswa masheleni a milioni dza rannda dza 73,4 o bvaho kha zwiimiswa zwi si zwa muvhuso. Kha vundu la Eastern Cape, Qumbu, ho gudiswa tshigwada tsha vhafumakadzi zwa vhuḁsila na u bveledza vphuphu ha mahayani.

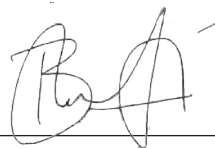
Vho n̄waha zwishumiswa na mitshini ya u baka u ri vha thome bindu la u baka u i tela u wana mbuyelo.

Vhatshu vha vharema vha 845 vhane vha vha vho rabulalasi vhane vha khou bveledza vho vhuḁelwa nga mbekanyamushumo ya Agricultural Bioeconomy Innovation Partnership. Hezwi zwi katela vhalimi 701 vha re kha mbekanyamushumo ya Ukhanyo Farmer Development support vho gudisiwaho u langa masheleni u ya nga zwigwada zwo vhwaho nga mimasipala kha vundu la Eastern Cape.

Kha vhatshu vho vhuḁelwaho, vha phesenthe dza 80 ndi vhafumakadzi, vha phesenthe dza 20 ndi vhaswa vha tshifumakadzi. Vha 22 vho gudisiwa u bveledza tshikhophu, vha 16 vho gudisiwa kha zwa u fuwa notshi. Vha 99 vho gudisiwa zwithu zwinzhi zwi katelaho u bveledza zwithu, u tola zwimela, u bveledza mbeu na zwiñwe zwinzhi. Vha 7 vho gudiswa nga ha zwithu zwa u tamba na u dola. Vhalimi vhatuku vha vhuḁoni ha mahayani vho thusiwa nga zwikili zwine zwi nga khwinisa vhuḁshilo havho siani la zwa masheleni.

ABIPP yo n̄waha yunivesithi ya Pitōri masheleni uri hu khwinifhadzwe vhuḁsila nga ndila ya tshi zwino zwino. Musi ho no khunyeledzwa u itwa dzenedzi thodisiso na eneya malimele na u fuwa, hu do gudiswa vhorabulasi vhatuku uri vha kone u iledza khombo dzine dza nga vha hone. Hezwi hu tou vha zwiñwe nyana zwine zwa sumbedza uri muhasho wo shuma hani nga uno n̄waha wa 2021/22 na u ri zwo konadzee nga thuso na u shuma nga maanga ha vhashumi vha muhasho na zwiimiswa zwayo.

Ri khou livhuwa nga maanga Minisita wa muhasho, vhurangaphanda havho na u vhea saints, thekinolodzi na u bveledza mihumbulo miswa phanda u itela u khwaḁhisa ikonomi na u lwa na vhuḁshayi na u shaea ha mishumo.



Mr KB Manamela, MP

Muthusi wa Minisita wa Pfundo ya Ntha, Saints na u Thoma Zwithu Zwiswa

5. REPORT OF THE ACCOUNTING OFFICER



Dr MP Mjwara
Accounting Officer

5.1 INTRODUCTION

The Covid-19 pandemic made the 2020/21 financial year a difficult one, but 2021/22 saw improvements, with the development of vaccines and the gradual lifting of lockdown restrictions opening up the economy. Some of the activities that had been affected by the pandemic could be implemented, and the Department of Science and Innovation (DSI) was able to achieve most (92%) of its planned targets, up from 87% in the previous year.

In the 2022/23 financial year, the DSI will pursue the vision of the 2019 White Paper's vision of "science, technology and innovation (STI) enabling sustainable development in a changing world" through the implementation of the STI Decadal Plan. The plan has two mutually reinforcing aims, namely, to direct the national system of innovation (NSI) so that it has a greater impact on South Africa's socio-economic and environmental priorities, and to maintain equilibrium between a focus on impact and continued investment and development of the NSI.

The Department will also continue contributing to the Economic Reconstruction and Recovery Plan, using STI to support the revitalisation of existing sectors and the development of new ones, to build a capable and developmental state, and to support developmental priorities in the areas of energy security and health, among others.

5.2 OVERVIEW OF THE OPERATIONS OF THE DEPARTMENT:

Efficient governance structures are the cornerstone of a properly functioning organisation. The DSI has various governance programmes to support its operations. During period under review, the Department ensured that all quarterly performance reports were compiled and submitted to the relevant institutions. Its Enterprise Risk Management Committee (ERMC) ensured that steps were taken to minimise and mitigate risks to the DSI. Under the Department's combined assurance approach, the ERMC and the Department's Audit Committee worked together to maximise risk and governance oversight, control efficiencies and optimise overall assurance. As required, the Department reported on its activities to the Portfolio Committee on Higher Education, Science and Innovation, which oversees the DSI's work on behalf of Parliament. Some of the activities presented to the Portfolio and Select Committees included the 2020/21 annual reports for the Department and its entities, as well as 2021/22 budgets and quarterly performance reviews.

5.3 SIGNIFICANT EVENTS AND MAJOR PROJECTS THAT TOOK PLACE DURING THE YEAR

Below are some of the significant events that took place in the 2021/22 financial year. More detail is given in the performance overview sections for the specific Programmes.

Knowledge utilisation for economic development

A feasibility study on the Hydrogen Valley was completed in October 2021. The focus of the Hydrogen Valley initiative will be on converting heavy duty diesel trucks into hydrogen fuel cell trucks, and supporting the upscaling of hydrogen consumption in the transport sector. The study identified nine promising projects across the mobility, industrial and buildings sectors that could be used to establish a South African hydrogen corridor. The study projected that the demand for hydrogen along the corridor could reach up to 185 000 tonnes by 2030, and could contribute up to \$100 million to the platinum industry in South Africa by then.

This is likely to have significant socio-economic impacts. By 2050, it is estimated that South Africa's Hydrogen Valley could contribute anything from \$3,9 to \$8,8 billion to GDP (both direct and indirect contributions), and create approximately 14 000 to 30 000 direct and indirect jobs a year by 2030.

An application to register the Hydrogen Valley as one of the key programmes under the Strategic Integrated Projects (SIP) was submitted, with support from the Infrastructure Investments Review Committee. The next step in the process to obtain SIP status will be a ministerial review to allow for the gazetting of the Green Hydrogen Programme (including other private sector projects).

In 2020/21, the DSI developed a Hydrogen Society Roadmap, which was approved by Cabinet on 14 September 2021 and launched on 17 February 2022, when the roadmap document was released to the general public. The purpose of the roadmap is to align stakeholders in a common vision for hydrogen-related technologies in order to create an environment where investment decisions can be made to unlock social and economic benefits for the country.

National Intellectual Property Management Office

During the 2021/22 review period, the National Intellectual Property Management Office (NIPMO) continued to provide financial and non-financial support to the offices of technology transfer (OTTs). It approved a total of R7 666 719 for three new OTT Support Fund agreements over a three-year funding cycle. The funding will support new and existing positions in OTTs, as well as activities such as technology marketing and other technology transfer activities.

In addition to the OTT Support Fund, NIPMO managed the Intellectual Property (IP) Fund, as mandated under the Intellectual Property Rights from Publicly Financed Research and Development Act. The NIPMO IP Fund provides financial support for a range of activities to secure IP rights generated following or associated directly with a product, process or service that resulted from publicly financed research and development. During the reporting period, NIPMO refunded 50% (R24,858 million) of all protection and maintenance costs for eligible IP rights following submissions to NIPMO by 21 higher education institutions and science councils.

NIPMO continued to provide training/skills development to personnel at OTTs, small, medium and micro-enterprises (SMMEs) and researchers and students. NIPMO, together with its partners, the Companies and Intellectual Property Commission, the World Intellectual Property Organization and the Technology Innovation Agency, upskilled a large number of trainees in IP and technology transfer awareness, and provided formal training sessions such as the Technology and Innovation Support Centres workshop. The move to online platforms originally necessitated by Covid-19 has been a particular success, allowing NIPMO to exceed its target for the number of trainees by a wide margin, with 312 trainees upskilled instead of the planned 250.

A highlight during the financial year was the publication of the second South African National Survey of Intellectual Property and Technology Transfer at Publicly Funded Research Institutions in June 2021. The survey reported that female representation in OTTs remained dominant over the years at over 60%. The number of black individuals increased substantially from 2014 to 2018, to 82% in higher education institutions and 68% in science councils. Furthermore, institutions concluded 292 new licences and 40 new assignments from IP emanating from publicly financed research and development (R&D), and 238 transactions collectively yielded revenues of over R185 million across 17 institutions. The report also showed that 55 start-up/spin out companies were formed, employing over 320 people over the five-year period.

Messenger RNA Hub

South Africa also made progress as the host of the mRNA vaccine technology transfer hub, an initiative of the World Health Organization in partnership with the government of South Africa, the French government and the Medicines Patent Pool. The aim of the hub is to diversify vaccine manufacturing

and, specifically, to accelerate vaccine production in Africa, through a consortium made up of the Medicines Patent Pool, Biovac, Afrigen Biologics and Vaccines, the DSI, the South African Medical Research Council, a network of universities and the Africa Centres for Disease Control and Prevention. The main objective is to establish a training facility where mRNA technology is developed to the scale required for the mass production of vaccines, and for the full package of technology developed to be transferrable to multiple recipients in low and middle-income countries.

Space science

The DSI has been supporting the development of domestic rocket engine technologies since 2010, when a former minister called for the DSI to start looking at a 20-year launch vehicle technology development plan for South Africa. The support is also aligned to the strategic goal of space industry development to encourage R&D, human capital development, local private sector development, and advanced manufacturing.

The Aerospace Systems Research Group at the University of KwaZulu-Natal received funding and spearheaded the development of rocket engine technologies in both liquid and solid rockets. The Ablative Blow-down Liquid Engine (ABLE) was successfully tested in November 2021 at the Denel Overberg Test Range in the Western Cape. The powerful liquid-propellant rocket engine is the first step towards developing a launch vehicle for placing satellites into Earth orbit. ABLE combusts liquid oxygen and jet A-1 fuel to produce just under two tons of thrust and is similar in design to engines powering the newest small satellite launch vehicles.

Although there are bigger commercial engines in operation, ABLE is one of the most powerful student-built liquid rocket engines ever produced. Furthermore, the first three satellites of MDASat-1 were launched in Cape Canaveral on 13 January 2022 – the first launch of a satellite constellation developed on the African continent. This further cements South Africa's position as a leader in small satellites on the African continent and will help capture a niche market in the global satellite value chain. The full MDASat constellation will be an operational network of nine cube satellites that will detect, identify and monitor vessels in near real-time in support of South African maritime domain awareness. It will cover all South African land and marine territories, including the country's Exclusive Economic Zone and continental shelf.

Grassroots Innovation Programme and Living Labs

The Grassroots Innovation Programme (GIP) and Living Labs Programme support the realisation of the STI White Paper policy intent to strengthen the skills in the economy and support social innovation. In this context the GIP has been instrumental in ensuring an inclusive and responsive NSI characterised by equitable access to knowledge infrastructure, where support for technology product development, commercialisation, IP protection and mentorship is provided to beneficiaries in a manner that encourages the participation of women, youth and people living with disabilities. During this reporting period, the DSI has supported 100 beneficiaries and continues to increase the number of innovators supported by the programme. The GIP launched 10 innovation products on the market. The programme aims to support 300 additional beneficiaries over the Medium-Term Strategic Framework (MTSF) period. About 40% of innovators have successfully developed their products and protected their intellectual property. The programme will now expand its offering to include GIP Robotics, GIP Enterprise and GIP Exchange, which will facilitate technology exchange between the South African grassroots entrepreneurs and their Indian counterparts.

The DSI has partnered with the South African Local Government Association, the Department of Cooperative Governance and Traditional Affairs and various research institutions to institutionalise technologies demonstrated by the DSI in municipalities through the Viability and Validation of Innovations for Service Delivery Programme (VVISDP). Several policy dialogues have been organised with municipal stakeholders around creating an enabling policy environment for innovation in local government under the VVISDP. Innovation capacity building and innovation measurement interventions in municipalities are currently under way. The DSI is piloting e-participation in policy making and modelling for municipal residents.

The activities undertaken in the VVISDP contribute to the achievement of STI White Paper policy intent 4.13, namely, to strengthen government's role as an enabler for innovation. The VVISDP is developing an enabling environment for a capable state, using innovation to improve the delivery of basic services and build municipalities' innovation capacity.

The DSI is committed to improving the alignment of its innovation support interventions with the

District Development Model (DDM) over the MTSF. Through the DSI's three-pronged strategy for the DDM, 35 municipalities have been supported in adopting technologies and innovations in order to improve the delivery of basic services, i.e. water, sanitation, waste management, energy and decision-support tools. About 125 existing initiatives that are high impact and responsive to developmental challenges facing municipalities were prioritised in the context of the DDM. A further 18 municipalities participated in the VVISDP and received support in the form of decision-support tools to help improve business processes in various aspects of the service delivery value chain.

Innovative technology solutions for human settlement sector

In partnership with the national Department of Human Settlements, the DSI launched a Science, Technology and Innovation for Sustainable Human Settlements Roadmap to help mobilise resources and coordinate stakeholder efforts to create green and smart human settlements using technology and innovation, which is vital in the context of climate change and the 4th industrial revolution. Under the roadmap, an additive manufacturing (3D printing) construction technology project has been initiated with funding from the DSI. The project is being implemented in partnership with the KwaZulu-Natal Department of Human Settlements and the University of Johannesburg, and will assess the social acceptance of and policy implications for 3D printing technology in the human settlements sector.

The spatial monitoring of informal settlements using drones while supporting business opportunities for aspiring cooperatives, youth entrepreneurs and SMMEs (helping them to acquire drone operating licences and determine further areas of drone technology applications) was launched in partnership with the KwaZulu-Natal Department of Human Settlements and the Council for Scientific and Industrial Research (CSIR) to monitor the expansion of informal settlements and land invasion.

Local Innovation Advancement Toolbox and local economic development

The Local Innovation Advancement Toolbox (LIAT) comprises a set of tools to advance the innovation-driven local economic development (LED) agenda by assisting municipalities and LED stakeholders to achieve the following:

- Mapping local innovation infrastructure to support local innovation activities.

- Assessing levels of innovation prevalence in a locality.
- Mapping innovation actors, activities and networks in communities.
- Assessing municipalities' levels of orientation towards innovation-driven LED.
- Conducting participatory, evaluation, reflection and learning and other workshops in order to assist LED stakeholders to envision an innovation-driven local economy. This involves, among other things, identifying potential high-impact local innovation catalytic interventions with the potential to drive economic inclusion or broaden economic participation, job creation, small enterprise development and local economic sector development.

During the reporting period, LIAT moved into a new phase focusing on the development of a rapid version of the toolkit, facilitating local application of the toolkit, and deepening its institutionalisation. This work is being implemented in the Karoo region.

The Water Research, Development and Innovation Roadmap Skills Mapping Study

In 2021, a skills mapping study for the South African water sector was concluded under the Water Research, Development and Innovation (RDI) Roadmap. The study included mapping the capabilities in the sector and the demand for water sector skills. The study was carried out by Stellenbosch University and managed by the Water Research Commission (WRC), the implementation partner for the Water RDI Roadmap on behalf of the DSI.

A reference group, including the Department of Water and Sanitation, the DSI, the WRC, the Department of Higher Education and Training, the Energy and Water Sector Training Authority, Isle Utilities, GreenMatter, the University of the Witwatersrand and Rhodes University, provided direction for the study.

The capability mapping was done according to the seven clusters of the Water RDI Roadmap, which are as follows:

- Unlocking alternative sources of water.
- Governance, planning and management of supply.

- Improving the adequacy and performance of infrastructure (built and ecological).
- Financially sustainable “business” approaches for improving operational performance.
- Governance, planning and management of demand.
- Reducing losses and increasing efficiency of productive use.
- Improving monitoring and metering.

The study found that, for 45% of respondents, the majority of their RDI activities were linked to unlocking alternative sources of water.

In terms of skills required, the top skills in demand in the water sector were as follows:

- Using large-scale datasets (big data).
- Information management.
- Geographic information systems (GIS) and remote sensing.

Other matters highlighted by the study were inadequate capacity to take science to society, and the lack of social sciences and socio-ecological systems within the water-related RDI environment.

The Foundational Digital Capabilities Research Programme

Working jointly with various RDI programmes at the CSIR since the beginning of 2021, and following approval from Exco in February 2022, the Department established a 10-year Foundational Digital Capabilities Research (FDCR) Programme,

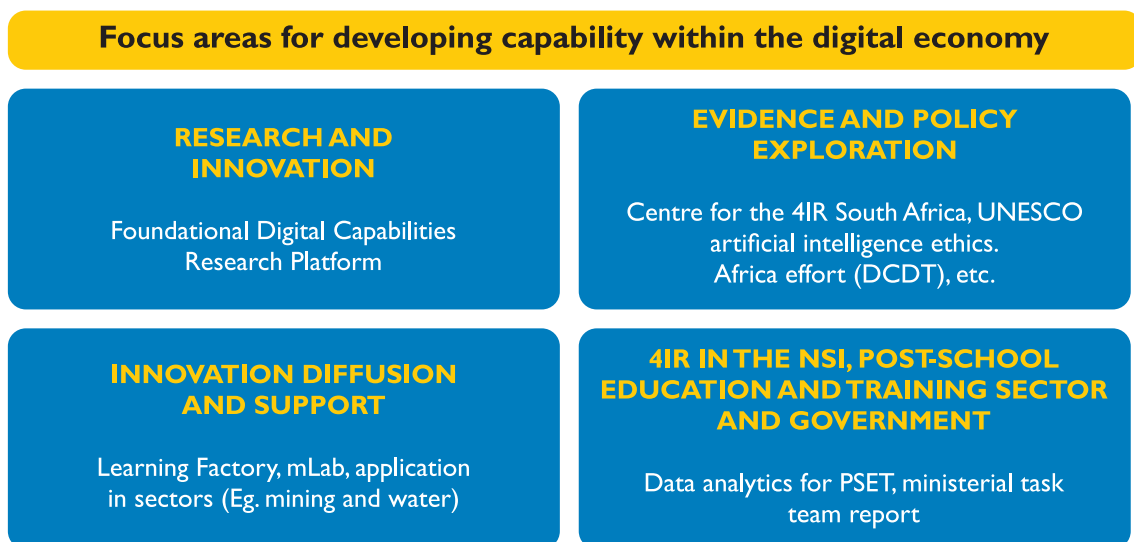
the anchor intervention in support of the Decadal Plan priority “The digital economy as a new source of economic and social development”. The FDCR Programme will be implemented through the CSIR over 10 years.

Since 2013, the ICT RDI Roadmap has served as the guiding document in directing investments in ICT-related RDI. However, there have been rapid technological changes enabling the fusion of the physical and digital worlds. To respond appropriately to these changes, the Decadal Plan identifies six foundational digital domains (artificial intelligence, robotics, cybernetics, augmented/virtual/mixed reality, modelling and simulation, block chain and cybersecurity, the Internet of Things/cloud-to-edge computing, networking and quantum computing) in which South Africa should focus its resources for the next 10 years. This will enable STI to provide opportunities for new sources of economic and social development.

The FDCR programme will not completely replace the ICT RDI Roadmap, but will refocus it to build foundational capabilities in the six identified domains. Whereas the ICT RDI Roadmap focused largely on applied research, the FDCR is focused on building the basic digital capabilities that will serve as a foundation for application development and customisation in all the economic sectors that can be leveraged. This will allow South Africa to leapfrog into the digital economy space, as envisaged in the Digital Economy Masterplan of the Department of Communications and Digital Technologies (DCDT).

The FDCR Programme is one of four focus areas under capabilities for digital economy research.

Figure 1: Focus areas for developing capability within the digital economy



While the FDCR Programme will build fundamental capabilities for industry and economic sectors, the plan is for the other three areas (evidence and policy experimentation; innovation diffusion and support; and 4IR in the NSI, post-school education and training, and government) to be supported primarily by other government departments and agencies, with economic and social transformation outcomes and impact being of the utmost importance. While the initiatives under the other three focus areas are more directly related to the application space, it is clear that they will not be realised if the foundational digital capabilities to support the transformation of the various relevant components of the South African economy are not built.

The Sector Innovation Fund and Industry Innovation Partnership Programme

The DSI's Sector Innovation Fund and the Industry Development Centres at the CSIR, which are supported through the DSI's Industry Innovation Partnership Programme, are aimed at incentivising the private sector to increase investment in research, development and innovation, with the ultimate aim of increasing competitiveness. The DSI continued to implement the Sector Innovation Fund, through ongoing support for seven industries, namely, horticulture, post-harvest innovation, viticulture, forestry, mineral processing, paper manufacturing and agroprocessing. Each industry's RDI portfolios address key competitiveness challenges for the industry, for example, sustainability, pest and disease control, accessing new export markets, etc. The year under review was the final year of the second phase of the programme. The SIF portfolio has supported 82 postgraduate students and the development of 18 knowledge products in the last year. A third phase of the programme will be implemented in the 2022/23 financial year.

The Department's efforts to support innovation-led industrial development also includes support for industrial development centres at the CSIR, namely, the Biomanufacturing Industry Development Centre, the Nanomaterials Industry Development Facility and the Photonics Prototyping Facility. The three centres cumulatively supported 23 SMMEs (a number of which secured additional funding support after the support they received from the centres), as well as 30 interns and three undergraduate students, who have since become employed by the CSIR as technicians.

The Regional Innovation Support Programme

As part of its efforts in support of the White Paper policy intent to increase the spatial footprint of innovation, the Department has continued to implement the Regional Innovation Support Programme (RISP) through a programme management unit based at the CSIR. The current RISP portfolio has nine regional innovation networking platforms (aimed at bringing together RDI communities, technology SMMEs, industry and government to establish an innovation-enabling ecosystem to support socio-economic development), six feasibility studies (aimed at strengthening or expanding regional innovation systems by facilitating the planning and establishment of innovation-enabling mechanisms such as science and technology parks, technoparks, innovation hubs and other similar concepts in particular areas) and two innovation baseline studies (aimed at assessing and analysing the status of regional innovation systems with respect to their effectiveness and readiness to promote and support innovation in the regions) in collaboration with various entities.

Science and technology investment

The Department expanded its support of a transformed, inclusive, responsive and coherent NSI by producing six statistical reports and/or policy briefs. One of these is the baseline (2016-2018) South African Agricultural Business Innovation Survey, which was produced during the year, providing valuable information on innovation in the national ecosystem of agricultural firms. The Innovation in the South African Informal Sector Survey and two case studies on textiles and food (2017/18) give an idea of informal sector innovation in the Sweetwaters area in KwaZulu-Natal. The 2014-2018 South African National Survey of Intellectual Property and Technology Transfer at Publicly Funded Research Institutions highlighted progress related to the commercialisation of intellectual property rights from publicly funded R&D. The 2019/20 National Research and Experimental Development Survey was also produced, quantifying contributions toward the National Development Plan target of raising the level of R&D investment in South Africa to 1,5% of GDP by 2030.

The R&D tax incentive programme continued its support for private sector RDI investments, receiving and processing 129 R&D tax incentive applications for a total of 331 projects between 1 January and 31 December 2021. Of these applications, 119 (96%) were adjudicated. Final

decisions from the Minister were provided for 95 applications (76,6%), of which 67 (54%) received decisions within 90 days. With the R&D tax incentive due to come to an end on 30 September 2022, a discussion paper on the incentive was published in December 2021 to obtain private sector inputs on the policy review of the incentive. The incentive will be extended until 31 December 2023 in order to provide certainty and to allow time to finalise the policy review process, including possible amendments to the Income Tax Act.

The inaugural meeting of the Interministerial Committee for STI endorsed a public STI budget coordination mechanism as an instrument in the Medium-Term Expenditure Committee (MTEC) and Department of Planning, Monitoring and Evaluation processes. The STI budget coordination process was highlighted in the 2022/23 MTEC technical guidelines as part of strategic prioritisation. This will lead to STI priorities being incorporated into the planning and budgeting process of national, provincial and local government departments, with departments setting aside an appropriate percentage of their budgets for STI. STI priorities

will also be incorporated as a line item under the Estimates of National Expenditure (ENE) to improve STI performance and the intensity of expenditure on research and development.

5.4 FUTURE PLANS OF THE DEPARTMENT

The Department's future plans will be guided by the Decadal Plan on STI.

5.5 DISCONTINUED ACTIVITIES/ ACTIVITIES TO BE DISCONTINUED

The Department will be guided by the Decadal Plan.

5.6 NEW OR PROPOSED ACTIVITIES

The Department is in the final stages of completing the Decadal Plan. The document will guide the Department on new objectives to be implemented. However, there are no specific new or proposed activities at this stage.

5.7 OVERVIEW OF THE FINANCIAL RESULTS OF THE DEPARTMENT

Departmental receipts

The table below highlights receipts collected by the Department in the financial year under review (2021/22) and the previous financial year (2020/21).

Table I: Departmental receipts

Departmental receipts	2021/22			2020/21		
	Estimate	Actual amount collected	(Over)/ under collection	Estimate	Actual amount collected	(Over)/ under collection
	R'000	R'000	R'000	R'000	R'000	R'000
Sale of goods and services other than capital assets and sale of scrap, waste and other used current goods	65	73	(8)	60	70	(10)
Interest, dividends and rent on land	32	37	(5)	13	13	-
Sale of capital assets	250	235	(15)	-	-	-
Financial transactions in assets and liabilities	550	745	(195)	2 003	2 157	(154)
Total	897	1 090	(193)	2 076	2 240	(164)

The Department does not generate revenue on a recoverable basis from the general public. The revenue collected comprises surpluses on project funds, commission from PERSAL transactions, interest received from a deposit account held with a commercial bank, payments of bursary debts by officials and other recoverable expenditure. The Department collected less revenue in 2021/22 than in the previous financial year. The reason for

the decrease was the collection of fewer surpluses on project funds.

Spending trends

The Department's appropriation for the year under review was R9,006 billion, which was a 23,7% increase from R7,278 billion in 2020/21. The significant increase of the 2021/22 budget

as compared to the 2020/21 budget was mainly the result of a R1,435 billion cut effected on the 2020/21 budget during the 2020 Special Adjustment Budget. The DSI started the 2021/22 financial year with an original budget of R8,933 billion, which increased by R72,323 million to R9,006 billion. The following changes were made to the budget during the 2021 Adjusted ENE: Additional funding of R67 million for the Presidential Employment Stimulus

Package and R5,323 million for an adjustment to the compensation of employees in salary levels 1 to 12.

The table below shows budget and actual expenditure per Programme for the financial year under review (2021/22) and the previous financial year (2020/21).

Table 2: Programme expenditure

Programme	2021/22			2020/21		
	Estimate	Actual amount collected	(Over)/under collection	Estimate	Actual amount collected	(Over)/under collection
	R'000	R'000	R'000	R'000	R'000	R'000
Administration	328 308	304 454	23 854	294 416	262 240	32 176
Technology Innovation	1 725 017	1 719 613	5 404	1 397 065	1,379,841	17,224
International Cooperation and Resources	136 276	131 848	4 428	119 302	114 229	5 073
Research Development and Support	4 995 061	4 991 443	3 618	3 735 718	3 730 976	4 742
Socio-economic Innovation Partnerships	1 820 977	1 814 725	6 252	1 731 786	1 677 979	53 807
Total	9 005 638	8 962 083	43 555	7 278 287	7 165 265	113 022

The Department's spending performance has been consistently above 90% since its inception. In the 2021/22 financial year, it spent 99,5% of its budget.

Summary of budget expenditure analysis per economic classification

Table 3: Summary of budget expenditure analysis per economic classification

Details	2021/22 R'000	2021/22 %
Amount voted	9 005 638	100
Actual expenditure	8 962 083	99,5%
Unspent funds	43 555	0,5%
Economic classification		
Current payments	485 623	5,42%
Transfer payments	8 467 427	94,5%
Payments for capital assets	8 941	0,10%
Payments for financial assets	92	0,001%
Total payments	8 962 083	99,5%

Virements

The Department effected virements estimated at R62,959 million after the Adjusted ENE process, i.e. 0,7% of the adjusted budget. An amount of R47,409 million was moved between major items and R19,727 million was moved between Programmes.

In addition to funds moved from other items, an amount of R11,175 million was shifted within transfers and subsidies. The virements into

transfers and subsidies were used for a wastewater surveillance system for Covid-19, the relocation of the Centre for Proteomic and Genomic Research to the Cape Health Innovation Campus, the development of a plant-based biosurfactant as a pharmaceutical product, a vaccine development strategy, the mRNA technology transfer hub, capacity development for historically disadvantaged institutions, K-line imager advanced technology development, a sorghum cluster and agroprocessing facility and hub, and the Indigenous Knowledge

Registration System (previously the National Recordal System).

Supply chain management

In the year under review, the Department revised its Asset Management Policy and continued with the implementation of its Supply Chain Management Policy and all related prescripts. The Department commenced with the implementation of its Preferential Procurement Strategy, which will assist in ensuring that the procurement of certain commodities is set aside for designated groups. The Department's bid management structures are functioning well and are carried out in a manner that maintains confidentiality, while promoting transparency and fairness. No unsolicited bid was accepted during the year under review.

The Directorate: Supply Chain Management is experiencing capacity constraints, which began as result of constraints under the compensation of employees budget throughout the Department. However, the vacant positions in SCM have been prioritised for filling in the 2022/23 financial year. The interim solution to address the challenge involves using resources from temporary employment agencies.

5.8 GIFTS AND DONATIONS RECEIVED IN KIND FROM NON-RELATED PARTIES

No gifts or donations in kind were received from non-related parties.

5.9 STANDING COMMITTEE ON PUBLIC ACCOUNTS (SCOPA) RESOLUTIONS

There were no SCOPA resolutions.

5.10 PRIOR MODIFICATIONS TO AUDIT REPORTS

The Auditor-General found no matters of significance regarding the administration of the Department.

5.11 EXEMPTIONS AND DEVIATIONS RECEIVED FROM THE NATIONAL TREASURY

No exemptions or deviations were raised by National Treasury.

5.12 EVENTS AFTER THE REPORTING DATE

No significant events occurred after the reporting date.

5.13 OTHER

No other significant events need to be brought to the attention of the readers of the annual report.

5.14 CONCLUSION

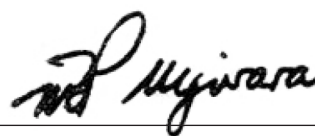
The focus of Department is now on the implementation of the Decadal Plan, which will be used as an instrument for the achievement of strategic objectives. The plan will also guide the Department in ensuring that national priorities such as energy security and healthcare are implemented. Although the Covid-19 lockdown restrictions have been lifted, the Department will ensure that all protocols are observed to ensure the safety of employees and visitors.

5.15 ACKNOWLEDGEMENTS AND APPRECIATION

I would like to thank the staff of the Department for their dedication and hard work in spite of the continuing challenges of the pandemic. The support and leadership of Minister Nzimande and Deputy Minister Manamela are appreciated as always.

5.16 APPROVAL AND SIGN OFF

The Annual Financial Statements have been approved by the Accounting Officer.



Dr PM Mjwara
Accounting Officer

31 May 2022

6. STATEMENT OF RESPONSIBILITY AND CONFIRMATION OF ACCURACY OF THE ANNUAL REPORT

I confirm that, to the best of my knowledge and belief –

- all information and amounts disclosed throughout the Annual Report are consistent;
- the Annual Report is complete, accurate and free from any omissions;
- the Annual Report has been prepared in accordance with the Guidelines on Annual reports issued by the National Treasury;
- the Annual Financial Statements (Part E) have been prepared in accordance with the Modified Cash Standard and the relevant frameworks and guidelines issued by the National Treasury (the Accounting Officer is responsible for the preparation of the Annual Financial Statements and for the judgements made in this regard);
- a system of internal controls designed to provide reasonable assurance as to the integrity and reliability of the performance information, the human resources information and the Annual Financial Statements has been established and is being implemented;
- external auditors were engaged to express an independent opinion on the Annual Financial Statements.

In my opinion, the Annual Report fairly reflects the operations, the performance information, the human resources information and the financial affairs of the Department for the year ended 31 March 2022.



Dr PM Mjwara
Director-General
31 May 2022

7. STRATEGIC OVERVIEW

7.1 VISION

Increased well-being and prosperity through science, technology and innovation.

7.2 MISSION

To provide leadership, an enabling environment and resources for science, technology and innovation in support of South Africa's development.

7.3 VALUES

- **Professionalism**

The Department is professional and delivers high-quality performance to both internal and external stakeholders.

- **Innovation**

The Department is innovative in solving problems and enhancing effectiveness and efficiency.

- **Ethical behaviour**

The Department and its employees are consistent in their actions and accountable and transparent in dealing with public funds and other resources.

- **Knowledge sharing**

The Department and its employees share and use knowledge constructively to ensure that it contributes to the building of a robust and productive knowledge economy.

8. LEGISLATIVE AND OTHER MANDATES

The following are the legislative and policy mandates that the Department is directly responsible for implementing, managing or overseeing.

Legislation	Mandate
Academy of Science of South Africa Act, 2001	The Act establishes the Academy of Science of South Africa to promote common ground in scientific thinking across all disciplines, including the physical, mathematical and life sciences, as well as human, social and economic sciences; to encourage and promote innovative and independent scientific thinking; to promote the optimum intellectual development of all people; to advise and facilitate appropriate action in relation to the country's needs, opportunities and challenges; and to link South Africa with high-level scientific communities within the Southern African Development Community, the rest of Africa and internationally.
Astronomy Geographic Advantage Act, 2007	The Act provides for the preservation and protection of areas in South Africa uniquely suited to optical and radio astronomy, and for intergovernmental cooperation and public consultation on matters concerning such areas.
Human Sciences Research Council Act, 2008	The Act provides for the continued existence of the Human Sciences Research Council, which carries out research that generates critical and independent knowledge relating to all aspects of human and social development.
Income Tax Act, 1962	Section 11D of the Income Tax Act gives the minister responsible for science and technology authority to approve scientific and/or technological research and development undertaken or funded in South Africa for a tax deduction in order to promote private sector R&D activities in the country.
Intellectual Property Rights from Publicly Financed Research and Development Act, 2008	The Act provides for the more effective use of intellectual property emanating from publicly financed research and development, through the establishment of the National Intellectual Property Management Office, the Intellectual Property Fund, and offices of technology transfer at higher education institutions and science councils.
National Advisory Council on Innovation Act, 1997	The Act establishes the National Advisory Council on Innovation to advise the Minister responsible for science and technology and, through the Minister, the Cabinet, on the role and contribution of science, mathematics, innovation and technology in promoting and achieving national objectives.
National Research Foundation Act, 1998	The Act establishes the National Research Foundation to promote basic and applied research, as well as the extension and transfer of knowledge in the various fields of science and technology.
Natural Scientific Professions Act, 2003	The Act establishes the South African Council for Natural Scientific Professions and legislates the registration of professional natural scientists, natural scientists-in-training, natural science technologists and natural science technologists-in-training.
Scientific Research Council Act, 1988	The Act provides for the continued existence of the Council for Scientific and Industrial Research, which undertakes directed research and development for socio-economic growth in areas that include the built environment, defence, the environmental sciences, and biological, chemical and laser technology.
South African National Space Agency Act, 2008	The Act establishes the South African National Space Agency to promote space science research, cooperation in space-related activities, and the creation of an environment conducive to the development of space technologies by industry.
Technology Innovation Agency Act, 2008	The Act establishes the Technology Innovation Agency to promote the development and exploitation of discoveries, inventions, innovations and improvements in the public interest.
White Paper on Science, Technology and Innovation, 2019	The White Paper sets the long-term policy direction for the South African government to ensure a growing role for science, technology and innovation (STI), using STI to accelerate inclusive economic growth, make the economy more competitive, and improve people's daily lives. It aims to help South Africa benefit from global developments such as rapid technological advancement and geopolitical and demographic shifts, as well as respond to the threats associated with some of these global trends.

9. ORGANISATIONAL STRUCTURE



Minister of Higher Education, Science and Innovation

Dr BE Nzimande, MP



Deputy Minister of Higher Education, Science and Innovation

Mr KB Manamela, MP



Director-General:

Dr Phil Mjwara



Deputy Director-General:

Institutional Planning and Support

Ms Gugulethu Zwane



Deputy Director-General:

Corporate Services

Ms Nombuyiselo Mokoena



Deputy Director-General:

Technology Innovation

Dr Mmboneni Muofhe



Deputy Director-General:

International Cooperation and Resources

Mr Daan du Toit



Deputy Director-General:

Research Development and Support

Dr Yonah Seleti



Deputy Director-General:

Socio-Economic Innovation Partnerships

Mr Imraan Patel

10. ENTITIES REPORTING TO THE MINISTER

The table below shows the entities that receive transfer payments from the Department of Science and Innovation, and report to the Minister of Higher Education, Science and Innovation. Their work is aligned with the DSI's strategic objectives and the goals of the National Development Plan.

Name of entity	Legislative mandate	Financial relationship	Nature of operations
Academy of Science of South Africa (ASSAf)	Academy of Science of South Africa Act, 2001	Transfer payments and contract work	ASSAf's activities encompass all fields of scientific enquiry and include the full diversity of South Africa's distinguished scientists. ASSAf has a dual role – to honour distinguished scholars through election to membership of the Academy, and to provide science advice to government and other stakeholders on critical national and global issues.
Council for Scientific and Industrial Research (CSIR)	Scientific Research Council Act, 1988	Transfer payments and contract work	The CSIR is a leading scientific and technology research organisation that researches, develops, localises and diffuses technologies to accelerate socio-economic prosperity in South Africa. The organisation's work contributes to industrial development and supports a capable state.
Human Sciences Research Council (HSRC)	Human Sciences Research Council Act, 2008	Transfer payments and contract work	The HSRC initiates, undertakes and fosters strategic basic and applied research in human sciences, and address developmental challenges in South Africa, elsewhere in Africa and in the rest of the world by gathering, analysing and publishing data relevant to such challenges, especially by means of projects linked to public sector-oriented collaborative programmes.
National Advisory Council on Innovation (NACI)	National Advisory Council on Innovation Act, 1997	Transfer payments and contract work	NACI provides advice to the minister responsible for science and technology and, through the minister, the Cabinet, on the role and contribution of science, mathematics, innovation and technology in promoting and achieving national objectives. NACI is also broadly responsible for the ongoing monitoring and evaluation of the national system of innovation.
National Research Foundation (NRF)	National Research Foundation Act, 1998	Transfer payments and contract work	The NRF supports, promotes and advances research and human capacity development, through funding and the provision of the necessary research infrastructure, in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including the humanities, social sciences and indigenous knowledge.
South African Council for Natural Scientific Professions (SACNASP)	Natural Scientific Professions Act, 2003	Transfer payments and contract work	SACNASP is the regulatory body for natural science practitioners (professional natural scientists, natural scientists in training, natural science technologists and natural science technologists in training) in South Africa. It ensures a high level of professionalism and ethics among South African scientists.
South African National Space Agency (SANSA)	The South African National Space Agency Act, 2008	Transfer payments and contract work	SANSA provides a wide range of services and data products to local and international organisations, governments and the business sector, as well as the global and regional academic community. These services include Earth observation data products, international launch monitoring and space weather information provision.

Name of entity	Legislative mandate	Financial relationship	Nature of operations
Technology Innovation Agency (TIA)	Technology Innovation Act, 2008	Transfer payments and contract work	TIA's activities involve customer-centric technology development funding and support and providing an enabling environment for technology innovation in collaboration with other role players. By enabling the development and exploitation of technological innovations, TIA contributes to economic growth and improving the quality of life of all South Africans.

Some of the highlights for the period under review are presented below.

10.1 ACADEMY OF SCIENCE OF SOUTH AFRICA

- ASSAf hosted and/or participated in approximately 70 public lectures and workshops.
- Forty-three of the country's leading scholars and scientists were elected and inaugurated as members of ASSAf. With the additional appointment of one honorary foreign associate by the ASSAf Council, ASSAf membership at the end of the year under review totalled 633.
- The percentage of women members increased to 29%, although the proportion of black members remained at 33%.
- The Academy presented ASSAf Science-for-Society Gold Medals to Prof. Shabir Madhi and Prof. Barry Schoub.
- ASSAf produced 15 publications, of which three were consensus studies, four were proceedings reports, three were peer review panel reports, one was a booklet and four were statements.
- As an initiative by the editorial advisory board of the Quest science magazine, ASSAf published a booklet aimed at South African learners, teachers and the general public, entitled Essential facts about Covid-19: The disease, the responses, and an uncertain future.
- The SciELO SA journal database has grown to 85 titles since its inception in 2009.
- The year 2021 marked the 117th year of publication of the South African Journal of Science. Six issues, made up of 131 articles (74 peer-reviewed articles), were published in 2021/22.
- ASSAf is sensitive to the gender dimension in science, and the various challenges women experience in society. The Academy thus continued to promote women and gender in science through activities such as the project on Eliminating Barriers to Women's Participation in Science: A Study of the African Research Universities Alliance, funded by the International Development Research Centre.



10.2 COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

- The CSIR has developed a new drug-screening platform for cancer patients that can identify drug combinations that are effective in precision medicine. This will be used to test the efficacy of approved cancer drug treatment in South African patients.
- A smartphone tool was invented by the CSIR to diagnose HIV, Covid-19, TB, hypertension and diabetes.
- The CSIR signed an exclusive licence agreement with global medical imaging device company Lodox Systems for the transfer of its Umbiflow ultrasound technology.
- The CSIR and the Agricultural Research Council worked with emerging farmers to collect data from unmanned aerial vehicles to demonstrate the usefulness of such data and refine precision farming methods.
- Technologies to beneficiate food waste were piloted in collaboration with the United Nations Development



Programme. This project aims to enable SMMEs and rural communities to derive value from food waste.

- The CSIR and international partners from Spain, Nigeria and Thailand won the World Association of Industrial and Technological Research Organization (WAITRO) 2021 Innovation Award for joint research on insect-based food sources.
- Support was given to the local aerospace, defence and marine manufacturing sectors to increase their global competitiveness.
- CSIR researchers teamed up with Nelson Mandela University and Stellenbosch University to document activities and vulnerabilities along South Africa's coast. The information can be used by government to manage the assets of the country's coastal areas and potential risks.

10.3 HUMAN SCIENCES RESEARCH COUNCIL

- The HSRC developed street level signage and storyboards that revisited the colonial heritage narratives of the city and its development in collaboration with the Buffalo City Development Agency.
- The HSRC was commissioned by the Infrastructure Transparency Initiative South Africa to undertake a scoping study of infrastructure projects in South Africa.
- Partnered with the Open Society Foundation South Africa to undertake a Municipal Skills and Capacity Assessment Study.
- Released the results of the Election Satisfaction Survey (ESS).
- The Presidency commissioned the HSRC to conduct a study to provide a better understanding of violence between South African nationals and immigrants from the rest of Africa in Gauteng.
- The HSRC undertook studies to understand the social dynamics of Covid-19.
- An evaluation of the National Education Collaboration Trust was undertaken.



10.4 NATIONAL ADVISORY COUNCIL ON INNOVATION

- NACI continued to monitor the performance of the NSI through the Science Technology and Innovation Indicators Report.
- NACI produced an Integrated Regional Agenda on Renewable Energy Report.
- The Bioeconomy Audit was completed.
- Facing the Facts 2019: Women's Participation in Science, Engineering and Technology was released.
- NACI developed a discussion document on the renewal of NACI and an Integrated Regional Agenda on Innovation, using using renewable energy as a case study.



10.5 NATIONAL RESEARCH FOUNDATION

- The NRF supported the hosting of the Global Research Council Africa Regional meeting.
- A seamless grants management system was established.
- A functional and aesthetically pleasing NRF website was launched in January 2022.
- The first cohort of students under the SA Germany (DFG) International Research Training Groups programme was selected and registered at the beginning of the 2022 academic year.
- A study, based on nearly 1 000 hours of the MeerKAT observations, resulted in a comprehensive overview paper for the MeerKAT Galaxy Cluster Legacy Survey, and the public release of a huge trove of curated data



now available for astronomers worldwide to address a variety of challenging questions.

- Significant funding has been secured from the DSI for the establishment of a ground-breaking Joint Marine Laboratories Programme. Administered through NRF-South African Institute for Aquatic Biodiversity, the funding will be used to operate a five-year pilot phase.

10.6 SOUTH AFRICAN COUNCIL FOR NATURAL SCIENTIFIC PROFESSIONS

- SACNASP continued to proactively advise the government and other relevant stakeholders on the contributions and role of the natural scientific professions in South Africa.
- Registrations for natural scientists were administered efficiently.
- The continuing professional development (CPD) service provider website is operational and shows accredited events.
- SACNASP continued to ensure that regulation remained a priority through the Professional Conduct Committee. Investigations were conducted and appropriate action was taken to promote the interests of the natural scientific professions and the general public.
- SACNASP collaborated with various stakeholders within the NSI.



10.7 SOUTH AFRICAN NATIONAL SPACE AGENCY

- A total of eight high-impact products and services were delivered for the benefit of Earth observation, space science and space engineering.
- SANSA achieved a cumulative research productivity score of 1805.27 against its annual target of 1 300.
- It also exceeded its annual target for support to students and interns in Earth observation, space science, and space engineering. The target was 50 students, and a total of 86 benefited.
- SANSA aimed to generate R69 million from both national and international space operations contracts. As at the end of the period under review a cumulative total of R82,3 million in revenue had been generated by the Agency.
- As at the end of the financial year, some 29 800 youth had benefited from SANSA awareness interventions.



10.8 TECHNOLOGY INNOVATION AGENCY

- The DSI has established an Innovation Fund that will enhance South Africa's capacity to commercialise technological innovations. TIA is one of the implementing partners alongside the SA SME Fund, the Public Investment Corporation and the Industrial Development Corporation.
- The Industry Matching Fund continues to grow as a successful catalytic finance and fundraising instrument. As at 31 March 2022, the fund had invested in 24 projects, 50% of which originated from TIA's de-risked project portfolio, with more than 60% of the projects involving publicly funded intellectual property.
- The KwaZulu-Natal Research and Innovation Sequencing Platform continued to support government's response to the Covid-19 pandemic during the period under review. It was awarded R10 million by the South African Medical Research Council as part of the Network for Genomic Surveillance.
- TIA supported a local biotechnology company, Medical Diagnostech, to obtain approval from the South African Health Products Regulatory Authority to manufacture rapid Covid-19 antigen test kits.
- The technology development phase of the Geo-Location Based Dynamic Spectrum Allocation System project was concluded during the period under review.



PART

Making *sure* it's *possible*

B



PERFORMANCE INFORMATION

I. AUDITOR-GENERAL REPORT: PREDETERMINED OBJECTIVES

The Auditor-General currently performs certain audit procedures on performance information to provide reasonable assurance in the form of an audit conclusion. The audit conclusion on the performance against predetermined objectives is included in the Report of the Auditor-General, published in Part E: Financial Information, on page 140.

2. OVERVIEW OF DEPARTMENTAL PERFORMANCE

2.1 SERVICE DELIVERY ENVIRONMENT AND ALIGNMENT WITH BROADER GOVERNMENT POLICIES

The National Development Plan

The planned service delivery initiatives of the Department of Science and Innovation (DSI) are aligned with the broader government service delivery agenda, which is based on South Africa's National Development Plan (NDP). The NDP, the blueprint for tackling South Africa's challenges of poverty, unemployment and inequality, highlights the importance of science, technology and innovation (STI) in addressing novel societal challenges. The NDP acknowledges that developments in STI fundamentally change the way people live, communicate and transact, with profound effects on economic growth and development.

Science, technology and innovation are key to equitable economic growth, and underpin not only economic advances, but improvements in health systems, education and infrastructure. The NDP maintains that countries characterised by strong STI capabilities are able to address poverty more effectively.

Policy and legislative milestones

The development of the STI Decadal Plan

The DSI and its national system of innovation (NSI) stakeholders, recognising the need for a new approach to optimise the contribution of STI to achieving the NDP's goals, developed a White Paper on STI.

The White Paper was approved in 2019 and will be implemented through a series of decadal plans, which will be reviewed at least every five years. The high-level direction and thrusts of the 2021-2031 Decadal Plan were approved by the Cabinet in March 2021. During the year under review, a number of consultative sessions to refine the approved initiatives were held with NSI actors such as STI-intensive government departments and public research organisations. At the end of the financial year, final consultations with the National Economic Development and Labour Council (Nedlac), civil society and the private sector were planned.

The White Paper introduced new governance arrangements to improve the coherence and coordination of the NSI. A milestone for the DSI and the NSI was the successful and well-attended inaugural meeting of the Interministerial Committee on STI (IMC) in November 2021. The ministers and directors-general at the meeting expressed their support for the Decadal Plan initiatives, and committed to working together to realise the vision of the White Paper.

Another significant new governance initiative is the coordination of the public budget for STI. In the preceding financial year, the DSI and the National Treasury reached an in-principle agreement that a public STI budget coordination mechanism would be integrated into the annual Medium-Term Expenditure Committee processes in order to improve the allocation of funding for STI across government. The year under review saw a number of presentations on the proposed STI budget coordination mechanism to high-level stakeholders in the governmental budgeting process, such as the Technical Finance Committee.

Milestones for the DSI included obtaining the support of provincial governments for the principles of the budget coordination mechanism, and agreements that provinces would earmark the procurement of research and development (R&D) by their own entities (rather than by consultants) as focus items for STI spending going forward. While preparing for the final sign-off of the Decadal Plan by the Cabinet after consultations with Nedlac, the DSI began to turn the focus towards the implementation of the initiatives approved by Cabinet during the previous reporting period. There has been a series of engagements by the DSI's senior and executive management,

led the Director-General, and discussions with entities on pivoting their planning to expedite the implementation of the Decadal Plan.

Regulations under the Indigenous Knowledge Act

The DSI, in partnership with North-West University, launched the Indigenous Knowledge Registration System on 25 March 2022. The system will be used to enable social cohesion along with the growth of an inclusive economy, in line with the NDP and the key provisions of the Protection, Promotion, Development and Management of Indigenous Knowledge Act, 2019. On 30 March 2022, the Cabinet Committee approved that Regulations under the Act be gazetted for public consultation. The Department will be working on the publication of the Regulations during the 2022/23 financial year.

Covid-19 response

During the period under review, the DSI continued to coordinate responses to the Covid-19 pandemic across the national system of innovation (NSI). While Covid-19 persists, the pandemic is now contained, and South Africa has made good progress in developing its capabilities for future needs.

National Policy Data Observatory

In the process of developing the national multidisciplinary science-based approach to combating the coronavirus, it became evident that the country needed a data observatory to facilitate the interrogation of the intersection between health, economic and social policies. The National Policy Data Observatory (NPDO) provides opportunities for government departments, academics, labour, industry and civil society organisations to collect, store, share and visualise data in ways that uncover new insights. It also promotes the coordination and communication of complex data sets and analysis in a multidimensional perspective. The new insights from the shared data support national decision-making that is data-driven and science-based, positively affecting socio-economic initiatives in the country.

The NPDO provided multi-spectrum data intelligence and an analytical support system for the National Coronavirus Command Council, the National Joint Operational and Intelligence Structure, and the Department of Planning, Monitoring and Evaluation (DPME). Social science research organisations were also mobilised to serve as anchor and knowledge institutions. These organisations conducted research that was presented to the above structures as a contribution to formulating evidence-based policy on the pandemic. Studies conducted included a survey to estimate the prevalence of antibodies against the Covid-19 virus in South Africa; a survey on Covid-19 vaccine confidence and hesitancy among health care workers; a cross-sectional survey from a MERS-CoV-experienced nation; the impact of Covid-19 on religious communities; and protective behaviours and secondary harms resulting from non-pharmaceutical interventions during the Covid-19 epidemic in South Africa (a multi-site, prospective longitudinal study). The focus of the Covid-19 Research, Oversight and Monitoring workstream, led by the DPME, went beyond the biomedical management of the vaccination programme and added value by looking at the policy implications of broader societal responses. The workstream served as a conduit to ensure that scientific research outcomes reached policy makers.

Diagnostics

The Department has been supporting a number of projects to address the need for simple, accurate and affordable rapid diagnostic tests that can be performed in remote settings to detect SARS-CoV-2 reliably. A few of these projects are at advanced stages of development, with CapeBio, in collaboration with the Council for Scientific and Industrial Research (CSIR), having successfully developed a versatile, ready-to-use continuous RT-PCR assay that is compatible with an array of point-of-care systems currently in use in South Africa.

The DSI and Technology Innovation Agency-funded project to develop Covid-19 rapid antigen tests locally, managed by the South African Medical Research Council (SAMRC), received approval from the South African Health Products Regulatory Authority (SAHPRA) for a rapid antigen acute infection test developed by Medical Diagnostech. The test provides results in two to 15 minutes and does not require any laboratory equipment, specially trained staff or electricity, while the results are almost 100% comparable with qPCR tests. All components are locally made. The cost per test is approximately R50.

Universal, genetically engineered, non-infectious SARS-CoV-2 controls systems for the validation, proficiency testing and external quality assurance related to Covid-19 testing developed by the Centre of Excellence of

Biomedical TB research, with financial support from the DSI/SAMRC, were used in the national Covid-19 testing programme coordinated by the National Health Laboratory Service and exported to at least 26 countries.

Genomic surveillance/epidemiology

Surveillance programmes contribute to the rapid detection, isolation, testing and management of suspected cases; guide the implementation of control measures; detect and contain outbreaks among specific populations; evaluate the impact of the pandemic on healthcare systems; and monitor longer-term epidemiologic trends and the evolution of Covid-19 virus. Robust surveillance is critical in monitoring the spread of Covid-19 and guiding the implementation of control measures.

An initial epidemiological study to understand Covid-19 transmission and natural history in KwaZulu-Natal (aimed at understanding how SARS-CoV-2 was spreading in urban and rural KwaZulu-Natal in order to guide locally appropriate prevention and clinical care) resulted in the establishment of a platform to undertake SARS-CoV-2 whole genome sequencing and phylogenetic analysis. In the year under review, the work of the Network for Genomic Surveillance in South Africa (NGS-SA) included conducting outbreak investigations, generating SARS-CoV-2 genomic data in near real-time, increasing the number of institutions analysing SARS-CoV-2, detecting variants and subvariants, studying the neutralisation capacity of vaccines against variants detected, monitoring the emergence and spread of new SARS-CoV-2 variants, and working with the international science community to track the movement of SARS-CoV-2 between countries.

The results from this genomics surveillance have been compiled in detailed reports to inform interventions by the National Institute of Communicable Diseases, the Department of Health and the World Health Organization.

The activities of the NGS-SA are supported through the deployment and utilisation of a SARS-CoV-2 sequencing solution developed by the Exatype Platform of the University of the Western Cape's spinoff company Hyrax Biosciences. This enables laboratories to perform SARS-CoV-2 variant typing on sequence data quickly and automatically. The solution requires no bioinformatics experience, no user training and no local installation of software, and has played a critical role in enabling the scale-up of SARS-CoV-2 genomic surveillance in South Africa and elsewhere. The systems currently have active users outside South Africa from 29 countries, including 11 other African countries.

Massive screening for Covid-19 using pooled testing

This project was a collaboration between the DSI-funded National Institute for Theoretical and Computational Sciences (NITheCS) and the KwaZulu-Natal Research Innovation and Sequencing Platform (KRISP). The research team applied a pooled testing method in the South African context to determine whether it could contribute to increased Covid-19 screening by speeding up and reducing the cost of testing. Testing is done by pooling multiple individual samples together. Only in the case of a positive pool test would individual samples of the pool be tested, thus substantially reducing the number of tests needed.

The pooled testing method was successfully implemented and validated. The protocol for the pooled testing was made available through a secure online platform. The method was shown to be reliable for the RT-PCR detection of SARS-CoV-2 infection, at significantly lower costs than lateral flow antigen tests. The method is cost-effective and operationally feasible, with minimal loss of assay sensitivity, and could be effectively applied on a much wider scale in the South African (and global) context, particularly during times of low prevalence. It would be an extremely effective tool for testing large groups as Covid-19 restrictions are lifted.

This project was a valuable catalyst for collaboration between NITheCS and KRISP, two institutions from very different disciplines, and lays the foundation for future transdisciplinary research.

DSI/SAMRC South African Population Research Infrastructure Network

Shortly after the first Covid-19 case was confirmed in South Africa, the South African Population Research Infrastructure Network (SAPRIN) developed a protocol to include Covid-19 surveillance into the routine surveillance operations of the SAPRIN nodes. The standard SAPRIN protocol was modified to use telephonic data collection when lockdown measures prevented physical visits to households for surveillance interviews. The SAPRIN Covid-19 protocol included an in-person or telephone interview with a household proxy informant to obtain information on the impact of the pandemic and measures to combat the pandemic on the household. Either through the proxy informant or directly where possible, screening was conducted for Covid-19 symptoms.

Symptomatic individuals were referred to the local health services. Once Covid-19 vaccines became available, questions on vaccination and vaccine willingness and hesitancy were added to the surveillance.

In keeping with the longitudinal nature of the SAPRIN population surveillance, households received repeated contact over the duration of the surveillance, to build up a longitudinal picture of the impact of the pandemic in the surveillance population.

Wastewater surveillance

The DSI also co-funded the SAMRC Wastewater Surveillance and Research Programme that monitors the non-infectious SARS-CoV-2 RNA, the fragments of the virus that causes Covid-19. The non-infectious SARS-CoV-2 RNA can be shed in the faeces of individuals that are symptomatic or asymptomatic. By testing wastewater weekly, the SARS-CoV-2 RNA signal can be measured to see whether prevalence is increasing or decreasing. This can be used as an early indicator of Covid-19 trends in a community.

Active pharmaceutical ingredients

During the year under review, the Active Pharmaceutical Ingredients (API) Technology Innovation Cluster was launched. APIs are the biologically active components used to make finished pharmaceutical products such as tablets and capsules. South Africa's heavy reliance on API imports is one of the factors behind the high cost of health care locally, as the country currently spends approximately R15 billion a year on imported APIs. The cluster is expected to save South Africa billions of rands.

Indigenous knowledge-based bioinnovation

The DSI's the Bio Products Innovation Cluster Advancement Network South Africa (BioPANZA) initiative is aimed mainly at commercialising natural products indigenous to South Africa. In order to promote the manufacturing and registration of high-end products, the DSI, through its African Medicines Platform, is working with SAHPRA on the development of an African Medicines Framework to inform regulatory legislation for clinical trials and commercialisation of medical products.

The African Medicines Platform has concluded preclinical studies on two indigenous knowledge-based multi-herbal formulations for Covid-19 and one for HIV/Aids. One of these has been submitted to SAHPRA for Phase II clinical trial approval. Three mono-herbal formulations have reached clinical trial phase. Moreover, leading members of the African Medicines Platform represent South Africa chairing the World Health Organization's Regional Expert Committee on Traditional Medicine for Covid-19 for the African region.

To consolidate and institutionalise various indigenous knowledge (IK) production and utilisation initiatives under one roof, the Department developed the IK-Based Bio-Innovation Institute Framework, which will undergo wider consultation during the 2022/23 financial year. The framework was approved by the DSI Exco.

The DSI leads the Research, Development and Innovation Pillar of the national Cannabis Master Plan, and progress has been made in the development of seven medicinal cannabis products (for cancers, diabetes, cosmeceuticals, neurodegenerative diseases and Covid-19). The African Medicines Working Group was established in collaboration with SAHPRA to finalise the framework for the regulation of African medicines, including the evaluation of these medicines and their registration in the Essential Medicines List for South Africa for clinical application.

Hydrogen energy

On 14 September 2021, Cabinet approval was obtained for the extension of the Hydrogen South Africa programme for the next 10 financial years, from 2022/23 up to 2030. Continued long-term investment in research, development and innovation (RDI) will contribute to economic reconstruction and recovery.

A study on the feasibility of the Hydrogen Valley (the first phase of the Platinum Valley initiative) was completed and launched in partnership with Anglo American Platinum, Bambili Energy and ENGIE in October 2021. The Hydrogen Valley corridor will have three hubs with a high concentration of hydrogen demand and access to green hydrogen, one in Johannesburg Hub, one in Mogalakwena (Limpopo) and one in Durban/Richards Bay. The study identified nine catalytic projects across the mobility, industrial and buildings sectors to kick-start the hydrogen economy. These projects will cost approximately \$1,2 billion to implement. The initial focus of the Hydrogen Valley will be the conversion of heavy-duty diesel trucks to heavy duty fuel cell trucks, while supporting the upscaling of hydrogen consumption in the transport sector.

In terms of socio-economic benefits for South Africans, the implementation of the South African Hydrogen Valley corridor could create 14 000 to 30 000 direct and indirect jobs per year by 2030, and by 2050, could contribute between \$3,9 and \$8,8 billion to GDP (direct and indirect contributions). The study projects a contribution of up to \$70 million to the platinum industry in South Africa by 2030.

To facilitate the implementation of the Platinum Valley initiative, the DSI has signed a memorandum of understanding with Sasol, the Gauteng Department of Economic Development and the Central Energy Fund. The agreement is aimed at promoting potential investments, scaling up nine catalytic projects identified and embedding transformation in the hydrogen economy landscape, as well as establishing strategic partnerships that will promote the manufacturing of locally developed intellectual property for sale to local and international markets for the benefit of South Africa.

An application has been submitted to register the Hydrogen Valley as a key programme for South Africa under the Strategic Integrated Projects (SIP). The registration application was supported by Infrastructure South Africa's Investment and Infrastructure Review Committee on 7 April 2022. The next step towards SIP status will be a ministerial review of the green hydrogen programme (including related private sector projects).

On 17 February 2022, the Minister launched the Hydrogen Society Roadmap. The purpose of the roadmap is to align stakeholders in a common vision for hydrogen-related technologies in order to create an environment where investment decisions can be made to unlock social and economic benefits for the country.

The District Development Model

In support of the capable and developmental state needed for economic recovery and growth, the Department strengthened its innovation for service delivery portfolio. It continued to provide appropriate innovative technology solutions to improve decision-making at local government level, aligning its initiatives to the District Development Model (DDM). During the year under review, the DSI worked on the following, among others:

- Strengthening STI capacity at local municipality level, thereby contributing to local economic development.
- Engaging lead departments on a data observatory to enable real-time access to DDM information, which is critical for evidence-based decision-making.
- Deploying the Municipal Innovation Maturity Index (MIMI) to assess readiness and strengthen innovation maturity to improve service delivery.
- Harnessing solutions developed by DSI entities to support the DDM through the Viability and Validations for Innovations for Service Delivery Programme (VVISDP).
- Submitting the DSI's DDM project information to the Department of Cooperative Governance and Traditional Affairs (COGTA) for planning purposes.
- Developing a decision-support tool to assess the impact of the DDM interventions.

Recognising innovation an important part of service delivery, the DSI has developed a departmental approach to the identification, selection and packaging of responsive and impactful projects to support the DDM, as well as to ensure that STI interventions are included in municipal DDM One Plans and aligned with the municipal integrated development plan processes and strategies.

MIMI, which has now been digitalised, provides information on the innovation capabilities and readiness of local government to deliver effective services, and encourages private sector partnerships to support bankable smart city initiatives in municipalities. During the year under review, MIMI continued to be valuable in informing the efficient deployment of resources and innovative service delivery technology solutions in areas such as water, sanitation, energy, waste management, connectivity and human settlements.

During 2021/22, the DSI held briefing workshops with municipalities that submitted expressions of interest regarding participation in the VVISDP programme in partnership with the South African Local Government Association (SALGA). Various municipal requirements analysis workshops were successfully conducted. Contracts were entered into with implementing entities for VVISDP initiatives to support municipalities in six programme workstreams.

Engagements are currently under way with DSI partners, municipal DDM stakeholders and various government departments to position the District Development Model as a platform for innovation. In partnership with the EU, COGTA and SALGA, the VVISDP is being rolled out on a large scale, and strategies for using innovation and green infrastructure in municipalities to achieve inclusivity and address unemployment, poverty and inequality.

2.2 SERVICE DELIVERY IMPROVEMENT PLAN

The Department has completed a service delivery improvement plan.

Table 1: Main services and standards

Main services	Beneficiaries	Current/actual standard of service	Desired standard of service	Actual achievement
Provide funding to institutions and agencies to support the development of technology solutions, products and services in the areas of space science, energy and the biosciences	Public research institutions, science councils, universities, private sector and entities	All funding transferred by the end of the financial year	All funding transferred by the end of the financial year	All funding transferred by the end of the financial year
Financial support for offices of technology transfer (OTTs) located at higher education institutions and science councils	Recipients include OTTs at 26 higher education institutions and 10 institutions listed in Schedule I of the Intellectual Property Rights from Publicly Financed Research and Development Act	OTTs financially supported by the end of the financial year	OTTs financially supported by the end of the financial year	OTTs financially supported by the end of the financial year
Support uptake of space applications by government departments and agencies	Government departments (national, provincial and local) and agencies	<ul style="list-style-type: none"> National geospatial decision-support tool Base maps for national land use and cover layers (human settlements and water bodies layers, and disaster management and national vegetation maps) Coordination of national Earth observation activities and promotion of the uptake of Earth observation applications 	<ul style="list-style-type: none"> Up-to-date national geospatial decision-support tool Up-to-date base maps for national land use and cover layers (human settlements and water bodies layers, and disaster management and national vegetation maps) Better coordination and increased uptake of Earth observation applications 	<ul style="list-style-type: none"> Two decision-support tools were developed through SANSA. Access to up-to-date national informal settlement layers assists in the prioritisation and fast-tracking of service delivery to communities, e.g. growth in built-up areas and settlements at risk of disaster such as flooding. The information can assist in understanding the status of human settlements developments and help in the development of strategies aimed at developing sustainable human settlements.

Main services	Beneficiaries	Current/actual standard of service	Desired standard of service	Actual achievement
Placement of graduates and postgraduate students in science, engineering, technology and innovation (SETI) institutions for workplace experience	Graduates and postgraduate students	Support provided to about 15% of internship positions available for qualifying graduates between the DSI and its partners	Support provided to about 30% of internship positions available for qualifying graduates between the DSI and its partners	Support provided to about 14% of internship positions available for qualifying graduates between the DSI and its partners
Research grants to researchers	Researchers in universities, science councils and other national research facilities	Support provided to about three of every 10 qualifying researchers	Double the support to about six of every 10 qualifying researchers	Three of 10 qualifying researchers supported in 2021/22
Financial and strategic support of research and development (R&D) initiatives that will lead to patents and prototypes	Universities, science councils, public-private partnerships	Ongoing support provided for R&D and demonstration of technology-based solutions with the intention of promoting their commercialisation and use	Ongoing support provided for R&D and demonstration of technology-based solutions with the intention of promoting their commercialisation and use	16 intellectual property rights filed and more than 100 prototypes generated during 2021/22

Table 2: Batho Pele arrangements with beneficiaries (consultation access)

Current/actual arrangement	Desired arrangement	Actual achievement
Institutions and agencies submit R&D project proposals and business plans. These are evaluated and approved by the Department and funding is transferred once approval has been obtained.	No change required.	Institutions and agencies submitted R&D project proposals and business plans. These were evaluated by the Department and funding was transferred once approval had been obtained.

Table 3: Service delivery information tool

Current/actual information tool	Desired information tools	Actual achievement
Advocacy communication strategy	Implementation plan for dissemination	Strategy approved by the DSI Executive Committee (Exco)
Ministerial guidelines on awarding bursaries	A framework for reporting on the implementation of ministerial guidelines	Annual reporting on progress with implementation of ministerial guidelines
Communication strategy, including exhibitions and media	Implementation plan for dissemination, including exhibitions and media	<ul style="list-style-type: none"> • Strategy approved by Exco • Exhibitions and public participation programmes were affected by Covid-19

Table 4: Complaints mechanism

Current/actual complaints mechanism	Desired complaints mechanism	Actual achievements
The National Research Foundation (NRF) has an appeal process for postgraduate students who are not awarded bursaries.	Panel of experts	Appeal framework reviewed by NRF
The NRF has an appeal process for researchers who are not awarded grants.	Framework with more efficient processes	Appeal framework approved
Technology Innovation Agency	Appeals procedure	Appeals procedure being implemented
The National Intellectual Property Management Office (NIPMO) has a dispute mechanism for administrative decisions it takes that may adversely affect a recipient.	Dispute panel	Dispute panel in place, with approved terms of reference and rules of procedure, as mandated by the Intellectual Property Rights from Publicly Financed Research and Development Act

2.3 ORGANISATIONAL ENVIRONMENT

Covid-19

Owing to the Covid-19 pandemic and regulations, the DSI had to adjust its internal operations without compromising its service delivery mandate. In response to various alert levels, the Department continued with the implementation of hybrid working arrangements, with a combination of physical presence in the Department's building and remote working.

The DSI organisational environment is founded on the principles of good corporate governance. Despite the Covid-19 implications and economic constraints, which affected operations and the compensation budget, the Department's operational efficiency remained a priority. During the period under review, the DSI was rated among the best performing national departments for the fourth year in a row. The Department also received a clean audit for the previous financial year from the Auditor-General, for both financial and non-financial operations.

Corporate governance issues

The Department's internal processes and systems ensured that good corporate governance prevailed through sound administrative practices, effective operational systems, mechanisms to ensure financial oversight, information technology, and the IT Steering Committee. Combined assurance involved governance structures such as Exco, the Enterprise Risk Management Committee and the Audit Committee, as well as regular reporting and face-to-face interactions. There was also collaboration with the Audit Steering Committee convened by the Auditor-General.

Employment equity

The Department has continued with the implementation of the approved Employment Equity Plan. In the first and second quarters of the year under review, the Department achieved female representation of 52% at Senior Management Service (SMS) level. However, due to staff turnover, by the end of March 2022 female representation at SMS level was 48,45%. In terms of people with disabilities, the Department achieved representation of 3,5% of total staff. A Women in Management leadership development programme was launched in 2020/21 to build a competent pool of female managers. As part of the initiative to create a leadership pipeline of women within the Department, 19 women participated in a leadership development course offered by Nelson Mandela University.

Skills development

The Department implemented its Skills Development Plan as part of the capacity development programme to improve service delivery. However, the Covid-19 lockdown restrictions under levels 5, 4 and 3 affected the roll-out of the targeted learning programmes that included leadership and management development programmes, and generic and core competency development programmes. Employees attended virtual employee wellness and talent management seminars and workshops. The Department also implemented orientation programmes for newly appointed employees, covering legislation and policies relevant to the DSI and government in general.

Employees mainly attended virtual seminars, workshops and orientation/advocacy sessions on policies and legislation applicable to government, particularly the Department's corporate and administrative work functions.

Financial disclosures

During the period under review, 100% of SMS members submitted their financial disclosures by the due date. There was a significant improvement in the level of compliance with the Performance Management Development System, with 100% compliance by members of the SMS and non-SMS employees.

3. PROGRESS TOWARDS ACHIEVEMENT OF INSTITUTIONAL OUTCOMES

Outcome 1: A transformed, inclusive, responsive and coherent national system of innovation

Outcome statement: Expand, transform and enhance the responsiveness of the NSI

The adoption of the White Paper on STI marked a shift from focusing primarily on the development of the NSI to creating an enabling policy environment that will enhance the NSI's contribution to addressing national priorities. The pillars of this approach are the following:

- The imperative of inclusivity should be mainstreamed in all STI-related policies and programmes, to support research and innovation-driven economic and spatial transformation, as well as empowering civil society, industry (particularly small business) and rural communities to contribute to the NSI.
- To maximise the benefits of government's STI investments, there should be frameworks and instruments in place to ensure that departments pool their resources and work together on STI programmes that cut across departmental boundaries – extending to aspects such as harmonising the governance and funding of science councils across the whole of government and avoiding the duplication of innovation incentives which often lead to inefficiency.
- The social contract between science and society should be strengthened to tap into the potential of STI to respond to the national priorities around poverty, unemployment, inequality and environmental degradation (in line with the Sustainable Development Goals and the NDP).
- Initiatives to improve the demographic representivity at all levels of the NSI should be expanded and intensified as part of the drive towards inclusivity.

Outcome 2: Innovation in support of a capable and developmental state

Outcome statement: Increase the use of innovation as an enabler in the delivery of efficient services and access to government programmes

A number of demonstration initiatives have gained traction towards introducing new ways of delivering services in municipalities. The Municipal Innovation Maturity Index (MIMI) a platform for enhancing the innovation capabilities of municipalities in order to stimulate and support innovation for improved service delivery was successfully launched in July 2021, with strong support for the 149 municipal stakeholders in attendance. The index serves as an information and decision-support tool to assist municipalities to promote innovation in their operations, improving service delivery and enabling smart, innovative cities in the future. The first report on innovation practices and measurements was published.

The MIMI initiative and other municipal innovation-enabling instruments funded by the DSI, e.g. the Viability and Validations for Innovations for Service Delivery Programme (VVISDP), have gained support and involvement from a number of municipal practitioners and officials. A VVISDP call for expressions of interest attracted 108 written submissions from 35 municipalities with 78 applications selected for technology demonstration and innovation support in areas such as water, sanitation, energy, waste management, connectivity and human settlements. About 18 decision-support tools for the digitalisation of municipal business processes in utility management, business processes and monitoring systems have been selected for support through the VVISDP.

In search of innovation-based systems to improve the delivery of human settlements, the DSI supported the demonstration of 3D printing of houses using additive manufacturing technologies. The pilot project has resulted in the coordination of various actors in civil society, government, academia and industry in support of innovation in the sector. The successful acquisition of 3D printing technology for the country signals a new era, in which technology-based models to accelerate the delivery of government-subsidised houses could create new norms, standards and routines for the sector, while opening economic participation opportunities for small, medium and micro-enterprises (SMMEs) in the supplier value chain, operations and maintenance, localisation, components and material supplies. The 3D construction printer (3DCP) will be piloted and demonstrated on a small scale in partnership with the KwaZulu-Natal Department of Human Settlements.

The 3DCP initiative underscores the country's efforts to make a transition in the human settlements sector, in the context of the 4th industrial revolution and climate change, towards smart, green and sustainable settlements. This initiative was boosted by the launch of the Science, Technology and Innovation for Sustainable Human Settlements Roadmap in June 2021. The launch of this roadmap established a multi-stakeholder innovation compact for the sector for the next 10 years in support of the Decadal Plan.

To support municipalities in driving the innovation-led Local Economic Development (LED) agenda, as expressed in the new Framework for Local Economic Development (which was developed jointly by the DSI and the Department of Cooperative Governance and Traditional Affairs, as well as other key players), the DSI has designed and is funding the implementation of the Innovation Champions for LED Programme (IC4LED). The DSI and its partners have started rolling out the programme in two districts (and local authorities in these districts), namely, Vhembe in Limpopo and OR Tambo in the Eastern Cape. The aim of IC4LED is to transform LED practice in the country, placing innovation at the centre of local development by strengthening local systems of innovation and production to bring about higher local economic performance, broaden economic participation (through job creation and enterprise development) and exploit local opportunities.

Through the programme, innovation champions (young people with LED and innovation expertise) are placed in LED offices and universities to support municipalities in introducing new ways of LED planning, such as mapping local innovation landscapes using the Local Innovation Advancement Toolkit developed by the Human Sciences Research Council (HSRC) and the DSI. The development of local economies by sourcing expertise and financial resources from various institutions in the NSI for the implementation of various interventions targeted at local economic sectors will also be supported. The IC4LED programme will eventually be rolled out in all 44 districts in the country, in partnership with LED stakeholders (i.e. local and district LED offices, knowledge institutions, science councils, traditional authorities, communities and the business community).

Provision of STI decision-support tools

Using satellites, the DSI has developed decision-support tools and information management systems to provide evidence that policy and decision makers can use to deliver services and improve the lives of all South Africans. These include spatial information layers on human settlements, which include urban and rural density maps that assist with the planning of appropriate resource deployment.

The DSI and the Department of Forestry, Fisheries and the Environment are supporting the CSIR to maintain the National Oceans and Coastal Information Management System, and develop relevant decision-support tools. The DSI is also supporting SANSA in the acquisition of a synthetic aperture radar dataset for maritime domain awareness (Operation Phakisa: Oceans Economy). The DSI is further supporting a consortium led by the CSIR, consisting of the CSIR, the Agricultural Research Council and industry, which is developing a precision agriculture information management system intended to assist emerging and subsistence farmers by providing near real-time farm-scale information and recommendations on farm management. The SANSA upgrade of the Space Weather Centre, enabling the provision of products and services to the African aviation industry, is being supported by the DSI, as is the South African Weather Service's involvement in the development of the Global Mercury Observation System.

Outcome 3: Knowledge utilisation for inclusive development

Outcome statement: Expand the use of scientific knowledge (as evidence) in support of innovation for societal benefit and public good

The use of knowledge for the inclusive development agenda is aimed at supporting experimentation with STI-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. The DSI investments in this area hold potential for future sources of economic growth, creating new types of jobs, and providing new solutions to problems in healthcare, agriculture and water-related services. In partnership with the European Union (through the National Treasury), the Department has supported interventions aimed at developing a model for advancing local systems of innovation and production to support smallholder essential oils producers in rural settings. Training programmes for young science graduates working on essential oil products, soil testing to support rural farming communities and SMMEs, and the cultivation of a variety high-value essential oil crops were successfully implemented in partnership with the Agricultural Research Council (ARC), the CSIR and the South African Essential Oil Business Incubator.

The DSI and its entities accelerated the implementation of initiatives supporting the commercialisation of innovations by youth entrepreneurs through the Grassroots Innovation Programme (GIP) and the Technology Acquisition and Deployment Fund (TADF), a strategy designed to increase the uptake and commercialisation of locally developed technologies. In the year under review, the GIP facilitated access to multi-tiered support packages for over 100 beneficiaries. This support for commercialisation benefited unemployed graduates, emerging as entrepreneurs participating in the programme. The entrepreneurship support instrument received a massive boost through partnerships forged with other government and private sector agencies in tourism and the insurance sector. Ten innovative products from the GIP were successfully launched on the market during Youth Month. Five of the successfully commercialised products are owned by women innovators under the age of 35, and provide marketable solutions, from skincare and wellness products, to personal tracking devices to help ensure the safety of children.

The TADF has gained traction as an instrument to promote the acquisition of locally developed technologies by government. The instrument de-risks the procurement of locally developed technology products and facilitates market entry for them. To date, over 89 locally developed technologies have been assessed in partnership with potential user clients for such innovations, with a few promising technologies selected for acquisition and deployment in schools, waste management and pollution management, as well as to fight crime in society.

The DSI is deploying innovation infrastructure and innovation support in marginalised communities to increase local innovation activities by local residents to address context-specific local economic challenges. During 2021/2022, five Living Labs were funded in township and rural communities in KwaZulu-Natal (KwaMashu and Cato Manor), the Western Cape (Athlone), the Eastern Cape (Bofolo) and the Free State (QwaQwa). These have supported over 200 young emerging innovators, giving some ICT-related training and others support for innovations that are relevant to local contexts.

Simultaneously, a second-tier innovation support programme was launched, focusing on the co-creation of LED-related innovations by a broad range of local stakeholders, e.g. innovators, community members, local business, academia and government, to increase the productivity of local economic sectors. The programme started with the development of the Spaza app, co-created at the MIYA Living Lab in QwaQwa (Free State). By the end of 2021/22, groundwork had been completed and partnerships had been concluded to set up six additional labs, expanding into the Northern Cape and the North West, and bringing the total number of labs that will be supported in 2022/23 to 11. Three of the new labs will be set up in community learning centres.

At the 2021 South African Science Forum, the Department hosted a session called “Youth in the knowledge economy conversing with policy-makers”. This marked the start of a conversation that will be carried over a series of engagements with young people in the knowledge economy with whom the DSI will be consulting in the process of developing a youth employment and development strategy for the NSI. The session hosted young innovators, business owners and social entrepreneurs, who are transforming communities. The participants shared information about their work and lived experiences (particularly in relation to dealing with government and its agencies) and gave advice to policy-makers. The brought real issues faced by young people to the fore, setting the tone for further engagement.

Outcome 4: Increased knowledge generation and innovation output

Outcome statement: Increase the relative contribution of South African researchers to global scientific and innovation output

Scientific outputs

In promoting globally competitive research and innovation in South Africa, the importance of the knowledge-generating function of research, particularly in the higher education sector, needs to be recognised. Knowledge generation is crucial for STI prospects. Without investment in publications, research grants, and research and innovation infrastructure, knowledge generation is not possible. Research grants are provided through several instruments designed to strengthen research capacity at universities and research-performing institutions.

Over 9 116 research articles were published by DSI/NRF-funded researchers and cited in the Web of Science citation database. In terms of supporting and promoting research that develops basic sciences through the production of new knowledge and relevant training opportunities, the DSI awarded 3 201 research grants through DSI-NRF-managed programmes, of which 1 585 went to black researchers, and 710 to black women. During the 2021/22 financial year, the Department, through the NRF, awarded 36 research infrastructure grants under the South African Research Infrastructure Roadmap (SARIR).

Innovation outputs

In terms of intellectual property, through the Seed Fund Programme, eight IP rights were filed in the year under review, and 36 prototypes and nine technology demonstrations were developed. A Media Lab at Mogoidwa Secondary School, in the Vhembe District Municipality, was launched on 8 December 2021 by the Deputy Minister of Higher Education, Science and Innovation. The project comprises a containerised media laboratory with 30 computers powered by solar photovoltaic (PV) energy and an MLT inverter. This is a contribution to the “future-proof education and skills” Societal Grand Challenge of the Decadal Plan. MLT Inverters (Pty) Ltd received financial support from the Department to develop a control system for its inverter.

An Internet of Things Factory project (IoT-Factory) is under way to ensure a truly collaborative national system of innovation among a joint network of universities and research institutes. The institutions involved in this programme include the CSIR, two historically disadvantaged institutions, two universities of technology and two other universities. The IoT-Factory programme enables South Africa to establish and maintain a critical mass of local researchers and faculty members in the area of IoT and related emerging technologies. Five postdoctoral researchers and 19 postgraduate students were funded through this programme in 2021/22.

Outcome 5: Knowledge utilisation for economic development in (a) revitalising existing industries and (b) stimulating R&D-led industrial development

Outcome statement: Improve the sustainability and competitiveness of traditional sectors of the economy and initiate/continue research and development in emerging technology areas that could enable the creation of non-traditional South African economic sectors. STI initiatives have been identified as the primary drivers of economic growth, job creation and the socio-economic reform agenda in the country

Revitalisation of the agricultural sector

In terms of revitalising agriculture, the Agriculture Bioeconomy Innovation Partnership Programme (ABIPP) has invested in many projects contributing to growth and competitiveness, including product and prototype development, value chain analysis, value chain development, and promoting partnerships.

In partnership with the private sector, ABIPP funded eight multistakeholder programmes/platforms in agriculture. The programmes currently contribute in the following agricultural commodities groupings: Wheat, maize, soybean, cotton (new), red meat (new), sweet potato (new), canola (new), indigenous vegetables (new) and cassava (new). The Technology Innovation Agency has leveraged a total of R73,4 million from the private sector, which includes funding from Grain SA, the Winter Cereal Trust, the South African Cultivar and Technology Agency, the Maize Trust, Sasol Trust, the Oil and Protein Seed Development Trust, and the Red Meat Industry Research Association. Other partners make in-kind contributions such as knowledge transfer and there are various ongoing partnerships, e.g. with the Climate Resilience Consortium and Ukhanyo Farmer Development, on marula, Cape Aloe, honeybush, rice and nixtamalisation, among others.

In terms of value chain development, the evaluation for the sorghum value chain upgrade was completed, evaluations for rice and cassava are ongoing, and a new evaluation has been approved for canola.

The nixtamalisation training initiative had good uptake in the Eastern Cape, with a group of women trained under the Women in Agriculture and Rural Development structure in Qumbu. The group received baking equipment from the Eastern Cape Department of Rural Development and Agrarian Reform to establish an enterprise and use nixtamalisation as a source of income, as well as for food and nutrition security.

Regarding agroprocessing in rural communities and farmer development support, 845 black emerging farmers benefited from ABIPP technology/innovation support programmes. This included 701 farmers in the Ukhanyo Farmer Development support programme who received training in financial literacy and nixtamalisation through various study groups in the Eastern Cape, grouped according to municipalities. Of the beneficiaries, 80% were women and, of the women trained, 20% were young women. Of the total of 845 farmers who received support in the form of training, 22 received training in the processing of aloe, 16 received support under the honeybush programme, and 99 farmers received training in, among other areas, agroprocessing, plant health surveys, diagnostic surveys and seed business development under the Strategic Innovation Partnership for grains and oilseeds. In addition, seven farmers were trained under the Cosmeceuticals Platform.

The programmes have changed the livelihoods of community members as they have successfully equipped rural smallholder farmers with skills and knowledge that they are able to use to improve their lives and derive income. In terms of modernising agriculture and supporting interventions for diagnostics, surveillance, monitoring and early warning systems, ABIPP funded the development of a digital platform at the University of Pretoria to support the piloting of tools and technologies, such as early warning systems to assist government and producers. Once the pilots have been completed, small-scale and developing producers will be trained to use these biosecurity tools to assist with early detection of biosecurity threats in the grain value chain.

The wheat sector produces only approximately half of the wheat that South Africans consume. The Wheat Breeding Platform, an ABIPP flagship, aims to provide industry with access to improved genetics and higher-yielding, locally adapted wheat germplasm to increase production and enhance the sustainability of the local wheat industry, as well as to reduce the balance of payments for wheat imports. On average 200 genotypes are identified per year for distribution (200 in 2021/22) and sent to the collaborating programmes of private companies Syngenta and Corteva, and the ARC's Small Grain Institute. This germplasm supports the ongoing breeding (pipeline) by the breeding institutions. In 2021/22, two cultivars were selected by industry for commercialisation. Of these two, one has been submitted for registration with the Plant Breeders' Rights Act.

ABIPP has recorded the completion of 16 prototypes in its aquaculture and agroprocessing programmes. These include 10 prototypes for aquaculture, namely, two low-tech spirulina prototypes; a field trial demonstration for one diagnostic kit for Infectious Spleen and Kidney Necrosis Virus and Tilapia Lake Virus (Technology Readiness Level (TRL) 6); the demonstration and launch of seven value added (canned) products by Karoo Catch (TRL 7). The Cape Aloe agroprocessing project completed six Aloe Ferox-based cosmetic product prototypes, and a call for expressions of interest from agribusinesses has been launched.

Mining

The Mandela Mining Precinct facilitated the Isidingo Drill Challenge, from which two new rock drill prototypes, with improved environmental and operator benefits, were developed in the previous financial year. The final, underground evaluation of the systems was completed at the proposed new test mine site in the year under review.

Work on expanding and implementing the South African Mining Extraction Research, Development and Innovation (SAMERDI) Strategy is under way. On 26 October 2021 terms of reference were signed by the CSIR (the implementing agency and host of the Mandela Mining Precinct), the Minerals Council South Africa and five trade unions. All parties regard the involvement of organised labour as vital for the success of mining modernisation.

Advanced manufacturing

The Advanced Materials Initiative is a DSI programme focusing on materials science research and development with the objective of establishing new industries, enhancing the competitiveness of existing industries and localising technology.

Covid-19 lockdown restrictions did not significantly affect the interactions between the Light Materials Development Network and industry. The team continued to secure contracts and provide technical advice to the manufacturing sector. Aluminium castings were produced for various companies and institutions and the CSIR was approached to be the technology partner for Veer Aluminium in the planned expansion of its extrusion facility. Under the DSI-funded Biorefinery Research, Development and Innovation Consortium, which comprises the CSIR, the University of the Witwatersrand and Tshwane University of Technology, a 3D-printing bio-nanocomposite filament technology from renewable biomass was developed at TRL 6. This offers an opportunity for product diversification in mature industries such as forestry and sugarcane.

Under the DSI-funded Strategic Industrial Bioinnovation Partnership Programme, the Department financially supported the conclusion of inbound technology transfer and an agreement between a local biotechnology start-up (Sawubona Mycelium) and the Universiti Teknologi Malaysia to localise the submerged cultivation of *Pleurotus ostreatus* for pleuron polysaccharide production technology. During this period, Sawubona Mycelium also concluded an equity investment acquisition deal with the OneBio Seed Investment Fund. In total, Sawubona Mycelium will be receiving R8m to fund their development objectives over the next two years.

Energy

The CoalCO₂-X RDI project's aim is to develop technologies to reduce emissions from coal-fired boilers in the cement, energy, steel and the pulp and paper industries. In this case, supporting these South African industries will help them to maintain their market share of their products and reduce the impact of the Carbon Border Adjustment Mechanism on their products. It aims to address the risk of carbon leakage caused by the asymmetrical climate policies of non-EU countries.

The South African Government introduced the Renewable Energy Independent Power Producer Programme (REIPPP), which seeks to introduce new players and renewable energy into the national energy system. Currently, approximately 6 000 MW in the energy system come from solar photovoltaic. Two DSI spin-off companies have signed a joint venture agreement to exploit the opportunities presented by the green energy transition. This will be achieved by building on their current services in solar resource measurements and onsite PV module testing.

GeoSun Africa has acquired a 25% stake of PV Insight, which will enable it to increase the market size of PV Insight outside South Africa, as GeoSun is already operating across Africa and the Middle East, and recently branched into South America. Apart from South Africa, GeoSun has a footprint in 13 countries (Namibia, Tanzania, Botswana, Kenya, Lesotho, Uganda, Mozambique, Nigeria, Malawi, Senegal, Madagascar, Jordan and Egypt) and the focus is primarily on utility-scale solar projects.

Space science and technology

Since 2010 the DSI has been supporting the development of indigenous rocket engine technologies. The purpose of the support is aligned with the former Minister's call for the DSI to start looking at a 20-year launch vehicle technology development plan for South Africa. The support is also aligned to the strategic goal of space industry development to encourage advanced manufacturing, R&D, human capital development and local private sector development.

The Aerospace Systems Research Group at the University of KwaZulu-Natal (UKZN) has been the recipient of funding support and spearheaded the development of rocket engine technologies in both liquid and solid rockets. The Ablative Blow-down Liquid Engine (ABLE) was successfully tested in November 2021 at the Denel Overberg Test Range in the Western Cape. The powerful liquid-propellant rocket engine is the first step towards developing a launch vehicle for placing satellites into Earth orbit. The ABLE combusts liquid oxygen and jet A-1 fuel to produce just under two tons of thrust and is similar in design to engines powering the newest small satellite launch vehicles.

Although there are bigger commercial engines in operation, ABLE is one of the most powerful student-built liquid rocket engines ever produced. Furthermore, the first three satellites of MDASat-1 were launched in Cape Canaveral on 13 January 2022 – the first launch of a satellite constellation developed on the African continent. This further cements South Africa's position as a leader in small satellites on the African continent and will help capture the niche market in the global satellite value chain. The full MDASat constellation will be an operational constellation of nine cube satellites that will detect, identify and monitor vessels in near real-time in support of South African maritime domain awareness. It will cover all South African land and marine territories, including the country's Exclusive Economic Zone and continental shelf.

SANSA has appointed a contractor who commenced with the construction of the building of the 24/7 Space Weather Centre. As of June 2021, the Space Weather Centre was almost at roof height, and the ground cleared for the generator house and the guesthouse. Additional designs and costing for the shielding and earthing of the generator house as a potential source of magnetic interference have also been completed.

In the year under review, SANSA successfully appointed four new space weather forecasters. The new forecasters are all black female graduates with a background in meteorology or physics, and were all unemployed at the time of receiving the SANSA offer. This represents a direct contribution to addressing the issues of unemployment and transformation.

Sector innovation funds

In the year under review, the Department continued to implement the Sector Innovation Fund (SIF) Programme, through ongoing support for the portfolio of seven industries, namely, horticulture, post-harvest innovation, viticulture, forestry, mineral processing, paper manufacturing and agroprocessing. The DSI published a call for proposals towards the end of 2021/22 for a third phase of the SIF programme, which will be implemented in the 2022/23 financial year. In addition, the Department's efforts to support innovation-led industrial development include support for four industrial development centres at the CSIR (the Biomanufacturing Industry Development Centre, the Biorefinery Industry Development Facility, the Nanomaterials Industry Development Facility and the Photonics Prototyping Facility). These initiatives are aimed at encouraging the private sector to increase investment in research, development and innovation, and to increase competitiveness as a result.

Creating innovative industries for the future

The Water RDI Implementation Unit (WRIU) has been leading the CSIR's STI for the Circular Economy parliamentary grant project. This entailed working with three sectors that undertook deep-dive studies in 2021/22 and four sectors that will complete short, starter reports. The WRIU participated in the stakeholder workshops for the mining, agriculture and manufacturing sectors in February 2022.

Technology localisation

The Technology Stations Programme (TSP), which is being hosted by TIA on behalf of the DSI, continued to provide support to approximately 2 500 SMMEs during the year under review. The focus on improving and maximising the management and impact of the TSP is ongoing. Ways of expanding the technology centres/stations network will be investigated in the 2022/23 financial year through the development of a strategy to maximise the impact of the technology diffusion instruments.

R&D tax incentive policy review

A highlight of the 2021/22 year for the R&D tax incentive was obtaining public inputs on the effectiveness and design features of the incentive through the publication of a discussion document and a National Treasury-DSI survey. These inputs are now being used, together with further industry engagements, to finalise the policy review of and amendments to section 11D of the Income Tax Act, in this way providing certainty to the private sector on the R&D tax incentive.

Outcome 6: Human capabilities and skills for the economy and for development

Outcome statement: Improve the representivity of those with high-end skills and increase the development of technical and vocational skills for the economy

The NDP identified skills development as a means to raise productivity and income to enhance the competitiveness of the economy. The ultimate aim of these investments is to ensure access and equity for all, particularly marginalised communities. In the period under review the Department, through the NRF and other agencies (CSIR, SANSa and the ARC), funded a total of 8 170 postgraduate students, comprising 5 643 pipeline (BTech/ honours equivalent and master's) students, and 2 527 doctoral students.

The DSI, through its programmes, supported a total of 1 194 graduates and interns during the 2021/22 financial year. The DSI Internship Programme is a workplace preparation programme that places undergraduate and postgraduate students in work environments to gain experience. The programme makes a significant contribution to the absorption of undergraduate and postgraduate students in the job market, while also attracting them to research careers, thereby contributing to the reduction of unemployment and inequality. This programme is complemented by the National Youth Service programme, which places unemployed graduates as volunteers in institutions whose work complements the strategic intentions of the Department in one way or another, particularly institutions that offer a community service-related environment.

The DSI, in partnership with the South Africa National Chapter for Women in Science, Engineering and Technology, the Organisation for Women in Science for the Developing World (which is hosted by the Academy of Science of South Africa), Black Women in Science and the Nka'Thuto Edu Propeller, hosted four webinars under the 2021 South African Women in Science Awards banner. The webinars attracted a total of 548 attendees, from African countries such as Botswana, Ghana, Kenya, Nigeria, Namibia, Madagascar and Lesotho, and overseas countries as diverse as Belgium, Russia, the United Kingdom, Portugal, the United States of America, France, Benin, Hungary, the Netherlands, Indonesia, Germany and Canada. Webinar topics included women and the changing nature of work; technopreneurs – a gendered perspective; and advancing diversity through the inclusion of women in STEM fields and organisations. The webinar on the last topic was a transatlantic one involving South African researchers and their counterparts in historically black colleges and universities in the United States of America (mainly Spelman College and Howard University).

During 2021/22, despite the challenges that the world is experiencing as a result of the pandemic, the National Intellectual Property Management Act (NIPMO) managed to hold several virtual training sessions and workshops related to IP and technology transfer. Because the training was virtual, NIPMO was able to reach a wider network of people and exceed the target set in the APP in a manner that was cost-effective for both participants and NIPMO. NIPMO and the DSI are working towards ensuring that the development and protection of IP leads to economic and/or social use of such publicly funded IP. NIPMO was able to support this initiative by tracking the number of publicly funded IP rights licensed for the first time.

To support this, the DSI is supporting a two-year internship programme that focuses on developing data-driven, augmented reality and artificial intelligence-enabled solutions to DHET's large data sets. The team working on this has capability, competency and expertise in data analytics, machine learning and artificial intelligence domains built from other DSI-supported programmes such as the Data Science Impact and Decision Enhancement (DSIDE) training programme and the Internet of Things Factory, a DSI-funded project hosted at the CSIR.

International cooperation and resources

The DSI's diverse portfolio of international engagements continued to support South Africa's NSI through participation in global, continental and regional STI opportunities, such as the Brazil, Russia, India, China and South Africa (BRICS) grouping, the Covid-19 African Rapid Grant Fund and European Union-funded research and

innovation. Progress towards driving South African strategic priorities were the central approach in engagement with bilateral partners, such as China, Ethiopia, France, Italy, Kenya and Colombia, to discuss possibilities for trilateral partnerships to promote South-South cooperation for the advancement of Pan-African relations. The DSI continued to promote South Africa as a preferred partner for excellence in science cooperation and was nominated to participate in the United Nations Conference on Trade and Development (UNCTAD) Technology Assessment Project on Agriculture and Energy alongside countries like Angola and Zambia. The aim of the project is to strengthen national capacities in selected African countries in designing and implementing policies that support learning and the diffusion and adoption of technologies in the energy and agricultural sectors and help build resilience.

Through bilateral and multilateral cooperation opportunities with international partners South Africa benefited from 806 international human capacity development opportunities, with outcomes including postgraduate qualifications and technical exchanges in support of policy the intents of the White Paper on STI. Only 24 of these opportunities focused on capacity building initiatives targeting historically disadvantaged institutions, which is a critical priority to improve on in the next financial year. Achievements included an engagement with the International Centre for Genetic Engineering and Biotechnology in support of the South African Women in Biotechnology Programme, and the critical role the Department played in positioning South Africa to submit a successful bid to the World Health Organization (WHO) to host a mRNA pilot plant in South Africa.

In a more comprehensive approach to Pan-African cooperation, the Department supported 15 projects that respond to the AU Agenda 2063, including the World Association of Industrial and Technological Research Organisations (WAITRO) African Chapter, the Science Forum South Africa session on the WAITRO Africa and Research Technology Organisations Collaboration Initiative and the Tshwane University of Technology (TUT) Water RDI collaboration for Agenda 2063. The DSI supported 20 initiatives responding to the Southern African Development Community (SADC) Regional Indicative Strategic Development Plan (RISDP), including the SADC STI Training Framework, which consolidates all the SADC STI capacity-building initiatives offered by various partners such as the United Nations Educational, Scientific and Cultural Organization, the United Nations Conference on Trade and Development, the Inter Agency Task Team, the SADC STI Indicators Programme, and the SADC Women in Science, Engineering and Technology Organisation (where South Africa is providing support).

Through science diplomacy the Department continued to champion the focus on STI as a critical part of global development initiatives, especially in relation to the Sustainable Development Goals (SDG), where eight projects were supported. A significant achievement was a memorandum of understanding entered into with the United Nations Development Programme (UNDP). This will support cooperation on SDG initiatives implemented by the Department. Through proactive engagement with partners, the DSI is supporting the priority of the development of a capable state, through initiatives such as the establishment of a national database for gender-based violence.

The BRICS Vaccine Research and Development Centre was launched virtually. The centre seeks to pool the complementary advantages of the BRICS countries in vaccine research and development, boost the capacity of BRICS countries to prevent and control infectious diseases, and provide timely help to other developing countries in need. In addition, the centre will prioritise joint research among researchers and institutions from BRICS countries, the development of vaccines, the facilitation of information and knowledge sharing, and the promotion of the inclusive distribution and use of vaccines to ensure accessibility and affordability.

South African researchers from various institutions were awarded funding to collaborate with BRICS partner countries in addressing the Covid-19 pandemic, e.g. for research and development towards Covid-19 vaccines and drugs, including repurposing available vaccines and drugs; the genomic sequencing of SARS-CoV-2 and studies on the epidemiology and mathematical modelling of the Covid-19 pandemic; artificial intelligence, information communication technology; high performance computing-oriented research for Covid-19 drug design, vaccine development treatment, clinical trials and public health infrastructure and systems; and epidemiological studies and clinical trials to evaluate the overlap of SARS-CoV-2 and comorbidities, especially tuberculosis.

4. PERFORMANCE INFORMATION BY PROGRAMME

PROGRAMME I: ADMINISTRATION

Purpose

The purpose of this Programme is to provide strategic policy and planning alignment, ensure effective governance, risk management, monitoring and evaluation within DSI and among entities, and provide strategic science communication and branding of the activities of the DSI, its entities and the NSI.

Components

Programme I is organised around administration, policy, budgeting and planning, and consists of the following components.

The Ministry and Office of the Director-General support the Minister, Deputy Minister and Director-General by providing professional and executive support. The 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.

Enterprise Risk Management 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.

Policy, Planning, Governance, Monitoring and Evaluation 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.

Internal Audit Activity 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, including annual performance information.

Human Resources ensures that the Department is able to (a) provide a professional service through accurate, consistent and best employment practices in all its activities; (b) attract, retain and motivate employees who share the organisational vision; (c) champion organisational transition, with a view to ensuring that change is embraced; (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.

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.

Information Systems and Knowledge Management is responsible for the delivery of services that support the Department's strategic plan and individual units' objectives through the effective use of information technology, the institutionalisation of knowledge management, and the preservation of the Department's institutional memory. Its purpose is to align the Information Systems and Knowledge Management Strategy with the business strategy to ensure that the Department achieves optimum use of its resources. In addition, the chief directorate is tasked with the responsibility of providing cutting-edge technologies that will optimise the use of information in a reliable and secure manner. This includes the implementation of effective and efficient business systems that meet users' needs, the provision of reliable IT infrastructure, and creating capacity for proper information management and business intelligence.

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, entity and NSI stakeholders. It seeks to provide the public with timely, accurate and clear information that is widely accessible to all South Africans about government policies, programmes, plans, services and initiatives in a non-partisan way, thus making it accountable to the public it serves. 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. Through the branding of the Department and its entities, it will demonstrate how the Department is "Making sure it's possible", and how, through the DSI's various initiatives, STI can transform and empower society. It promotes dialogue between citizens and government, including on policy, and establishes partnerships with a range of stakeholders, including the private sector, higher and post-school education institutions, and research institutions.

Legal Services responsible for providing effective and efficient legal services to the Department in order to ensure that the interests of the Department are protected against any legal risk. The component ensures that the Department complies with relevant legislation and takes a proactive approach to deal with matters that have the potential to give rise to conflict or legal challenges.

Institutional outcomes to which the Programme contributes

- Innovation in support of a capable and developmental state.
- A transformed, inclusive, responsive and coherent NSI.

TABLE 5: PROGRAMME I – ADMINISTRATION

		Partially achieved				Not achieved			
		Achieved							
Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement	Deviation from planned target	Status	Reasons for deviation
Innovation in support of a capable and developmental state	DSI public entities' APPs and shareholder compact DSI public entities' APPs and shareholder compact	DSI public entities' annual performance plans and CSIR shareholder compact approved by the Minister and chairpersons of the board	DSI public entities' 2020/21 annual performance plans and annual reports approved by the Minister by 31 March 2019	DSI public entities' 2021/22 Annual Performance Plans (NRF; HSRC; TIA; SANSAC; NACI; SACNASP; ASSAF) and CSIR shareholder compact signed by the Minister and chairpersons of the board by 31 March 2021	DSI public entities' 2022/23 annual performance plans (NRF; HSRC; TIA, SANSAC, NACI and ASSAF) and CSIR shareholder compact approved by the Minister and signed chairpersons of the boards by 31 March 2022 (non-cumulative target)	DSI public entities' 2022/23 annual performance plans (NRF; HSRC; TIA, SANSAC, NACI and ASSAF) and CSIR shareholder compact approved by the Minister and signed chairpersons of the boards by 31 March 2022	0	Achieved	None
	Decadal plan for the national system of innovation	Approved decadal plan to implement the 2019 White Paper on Science, Technology and Innovation	New indicator	Finalisation of the decadal plan and approval by Cabinet by 31 March 2021	Finalisation of the Decadal Plan and approval by Cabinet by 30 June 2021 (non-cumulative target)	Finalisation of the Decadal Plan and approval by Cabinet by 30 June 2021	0	Achieved	None
	Reduce vacancy rate	Percentage of approved funded positions filled annually	New indicator	92% of all approved funded positions filled by 31 March 2021	85% of all approved funded positions filled by 31 March 2022 (non-cumulative target)	85% of all approved funded positions filled by 31 March 2022	0	Achieved	None

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement	Deviation from planned target	Status	Reasons for deviation
	Good financial governance	Unqualified audit opinion with no financial matters in the report from the Auditor-General	Unqualified audit opinion with no financial matters in the report from the Auditor-General	Unqualified audit opinion with no financial matters in the audit report from the Auditor-General by 30 September 2020	Unqualified audit opinion with no financial matters in the audit report from the Auditor-General by 30 September 2021 (non-cumulative target)	Unqualified audit opinion with no financial matters in the audit report from the Auditor-General by 30 September 2021	0	Achieved	None
A transformed, inclusive, responsive and coherent NSI	Media and marketing initiatives to profile the DSI and its entities	Number of media platforms used to promote DSI and its entities	New indicator	Six platforms (print, broadcast, online, media liaison, stakeholder engagement and social media) to profile the DSI and its entities by 31 March 2021	Six platforms (print, broadcast, online, media liaison, stakeholder engagement and social media) to profile the DSI and its entities by 31 March 2022 (non-cumulative target)	Six platforms (print, broadcast, online, media liaison, stakeholder engagement and social media) to profile the DSI and its entities by 31 March 2022	0	Achieved	None
		Branding initiatives developed and implemented	New indicator	Two national thematic campaign reports on the branding roll-out initiatives by 31 March 2021	Two national thematic campaign reports on the branding roll-out initiatives by 31 March 2022 (cumulative target)	Two national thematic campaign reports on the branding roll-out initiatives by 31 March 2022	0	Achieved	None

Linking performance with budgets

Subprogramme	Detail for Programme I – Administration for the year ended 31 March 2022					
	2021/22			2020/21		
	Final appropriation	Actual expenditure	Variance	Final appropriation	Actual expenditure	Variance
	R'000	R'000	R'000	R'000	R'000	
I.1 Ministry	5,597	2,581	3,016	5,886	4,855	1,031
I.2 Institutional Planning and Support	155,647	145,262	10,385	127,539	113,247	14,292
I.3 Corporate Services	156,306	145,922	10,384	151,684	134,907	16,777
I.4 Office accommodation	10,758	10,689	69	9,307	9,231	76
Total	328,308	304,454	23,854	294,416	262,240	32,176

Strategy to address areas of underperformance

There were no areas of underperformance.

Changes to planned annual targets

No changes were made to planned annual targets during the year under review.

PROGRAMME 2: TECHNOLOGY INNOVATION

Purpose

The purpose of this Programme is to promote technology development and the protection and utilisation of publicly funded intellectual property for innovation with socio-economic impact.

Components

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

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

- Strengthening the research and innovation competencies that form the strategic foundation for the bio-based NSI.
- Developing and/or supporting strategic RDI programmes that provide for new knowledge and innovation outcomes related to the government's priority requirements.
- Coordinating role players across the NSI to ensure that appropriate skills, knowledge and competencies are made available to maximise socio-economic impact.
- Mainstreaming applied indigenous knowledge-based R&D, inclusive innovation and local manufacturing to support commercialisation models for sustainable livelihoods and improved quality of life.

The chief directorate has four directorates managing thematic priorities aligned to its focus areas, namely, Agriculture, Indigenous Knowledge-Based Technology Innovation, Industry and Environment, and Health Innovation.

Hydrogen and Energy supports the reduction in greenhouse gas emissions and air pollution, contributing to a more diverse and sustainable energy mix by enabling the widespread commercialisation of battery, fuel cell, renewable and net-zero technologies based on publicly funded intellectual property rights. It supports the penetration of clean and alternative energy technologies through research, development and validation efforts. This is to allow these technologies to be competitive with current technologies in terms of cost and performance while fostering strategic partnerships with the public and private sectors to reduce the institutional and market barriers to their commercialisation.

The chief directorate has three directorates managing thematic priorities aligned to its focus areas, namely, Hydrogen and Energy, Transport Fuels and Renewable Energy, and Power.

Space Science and Technology supports the creation of an environment conducive to the implementation of the National Space Strategy and the South African Earth Observation Strategy, 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 also play a critical oversight function over the South African National Space Agency (SANSA).

The chief directorate has two directorates managing thematic priorities aligned to its focus areas, namely, Earth Observation and Space Systems.

Innovation Priorities and Instruments supports and strengthens the innovation policy package (and related interventions) with the aim of creating and sustaining an enabling environment for innovation, technology development, and the utilisation, including commercialisation, of publicly funded R&D initiatives. It does this by identifying, developing, creating and supporting policy and institutional structures that facilitate technology development and its progression into national and international markets. The chief directorate also supports the development and implementation of emerging technologies, in areas such as synthetic biology, structural biology, systems biology and functional genomics (collectively comprising the South African BioDesign Initiative), nanotechnology, photonics and robotics, and converging technologies that have the potential to influence and affect social and economic development positively. These emerging technologies are being brought together under the Converging Technologies Platform, which seeks to emphasise their role in providing solutions to complex social and economic challenges in their integrated form. Moreover, the chief directorate supports the building

of innovation and entrepreneurship culture through industry internships in partnership with the Technology Top 100 companies. It has oversight of the Technology Innovation Agency (TIA) and augments seed, technology development and commercialisation funding. The chief directorate implements the Innovation Fund, which seeks to promote the commercialisation of publicly funded R&D.

The chief directorate has two directorates managing thematic priorities aligned to its focus areas, namely, Emerging Research Areas and Innovation Instruments.

The **National Intellectual Property Management Office** is the national implementing office for the Intellectual Property from Publicly Financed Research and Development Act (IPR Act) and is currently located in the Department as a specialised service delivery unit. It was established to provide for the more effective utilisation of intellectual property (IP) emanating from publicly financed R&D. It provides support to offices of technology transfer at universities and science councils, develops capacity in IP management, provides incentives for IP creators to encourage them to disclose, protect and commercialise their creations, provides funding through the IP Fund for the protection and maintenance of IP emanating from publicly financed R&D, and provides incentives, support, capacity development, funding and compliance services. NIPMO also ensures compliance with the IPR Act and Regulations by recipients of publicly financed R&D.

Institutional outcomes

- Innovation in support of a capable and developmental state.
- Human capabilities and skills for the economy and for development.
- Knowledge utilisation for economic development in (a) revitalising existing (traditional) industries and (b) stimulating R&D-led development.

TABLE 6: PROGRAMME 2 – TECHNOLOGY INNOVATION

		Partially achieved				Not achieved			
		Achieved							
Outcomes	Outputs	Output indicator	Audited actual performance 2019/21	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Innovation in support of a capable and developmental state	Decision-support tools	Number of decision-support tools utilised in all spheres of government	3 decision support interventions maintained by 31 March 2018	3 decision-support tools developed by 31 March 2021	2 decision-support tools developed and/or maintained by 31 March 2022	2 decision-support tools developed and/or maintained by 31 March 2022	0	Achieved	n/a
	SANSA and TIA oversight to ensure alignment with government priorities	Number of strategic and technical engagements with SANSA and TIA to ensure alignment with national priorities	New indicator	8 strategic and technical engagements with SANSA and TIA to ensure alignment to national priorities by 31 March 2021	8 strategic and technical engagements with SANSA and TIA to alignment with national priorities by 31 March 2022	8 strategic and technical engagements with SANSA and TIA to alignment with national priorities by 31 March 2022	0	Achieved	n/a
	SANSA Regional Space Weather Centre upgrades completed	Provision of space weather information for the aviation industry in South Africa and the African continent	New indicator	SANSA Regional Space Weather Centre upgrades initiated by 31 March 2021	3 new products and/or services developed (linked to high frequency propagation and/or Global Navigation Satellite System applications) by 31 March 2022	4 new products and/or services developed (linked to high frequency propagation and/or Global Navigation Satellite System applications) by 31 March 2022	+1	Achieved	This is a new indicator and the target was therefore conservative.
	CubeSat launched	Number of maritime domain awareness (MDA) missions completed in support of the Oceans Economy Phakisa	New indicator	Flight model delivered but not launched by 31 December 2020	Launch of 3 CubeSats for MDASat constellation by 30 December 2021	3 CubeSats launched in January 2022	0	Achieved	n/a

Outcomes	Outputs	Output indicator	Audited actual performance 2019/21	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Human capabilities and skills for the economy and for development	Support provided to master's and doctoral students	Number of postgraduate students (master's and doctoral) supported in designated energy, space, Innovation Priorities and Instruments and bioeconomy areas	185 postgraduate students (master's and doctoral) funded in designated areas by 31 March 2020	236 postgraduate students (master's and doctoral) supported in designated energy, space, Innovation Priorities and Instruments and bioeconomy areas by 31 March 2021	190 postgraduate students (master's and doctoral) supported in designated energy, space, Innovation Priorities and Instruments and bioeconomy areas by 31 March 2022	247 postgraduate students (master's and doctoral) supported in designated energy, space, Innovation Priorities and Instruments and bioeconomy areas by 31 March 2022	+57	Achieved	Planning was based on baselines and budget cuts. However, the demand for studentships is not always as planned or predicted.
	Artisans and/or technicians trained for the energy, space and bioeconomy	Number of artisans and/or technicians trained in space, energy and bioeconomy	New indicator	50 artisans and/or technicians trained in the energy and agriculture sectors of the economy by 31 March 2021	20 artisans and/or technicians trained in space, energy and bioeconomy by 31 March 2022	34 artisans and/or technicians trained in space, energy and bioeconomy by 31 March 2022	+14	Achieved	This is a relatively new indicator and more chief directorates were able to contribute to the indicator in this financial year.
	People trained in intellectual property management and technology transfer	Number of trainees upskilled in intellectual property management and technology transfer	242 trainees attending training initiatives in designated areas by 31 March 2020	346 trainees upskilled in intellectual property management and technology transfer skills by 31 March 2021	250 trainees upskilled in intellectual property management and technology transfer skills by 31 March 2022	312 trainees upskilled in intellectual property management and technology transfer skills by 31 March 2022	+62	Achieved	The target was exceeded because training sessions were held online. This made the sessions more accessible, as it was easier for individuals to attend, and participants did not incur costs.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/21	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Increased knowledge generation and innovation outputs	Disclosures received from publicly financed research and development institutions	Number of disclosures, received from publicly financed research and development institutions as reported to NIPMO	258 new disclosures reported by publicly funded institutions by 31 March 2020	226 disclosures received from publicly financed research and development institutions as reported to NIPMO by 31 March 2021	235 disclosures received from publicly financed research and development institutions by NIPMO by 31 March 2022	241 disclosures received from publicly financed research and development institutions by NIPMO by 31 March 2022	+6	Achieved	It is very difficult to predict the number of disclosures that will be made. Planning was based on performance in previous years.
	Disclosures licensed for the first time received from publicly financed research and development institutions and recipients as reported to NIPMO	Number of disclosures licensed for the first time received from publicly financed research and development institutions and recipients as reported to NIPMO	New indicator	New indicator	15 disclosures licensed for the first time received from publicly financed research and development institutions and recipients as reported to NIPMO by 31 March 2022	20 disclosures licensed for the first time received from publicly financed research and development institutions and recipients as reported to NIPMO by 31 March 2022	+5	Achieved	This is a new indicator and there was no established baseline to use when planning.
	Improve the filing of publicly funded intellectual property rights	Number of intellectual property rights filed based on RDI conducted in designated areas	New indicator	10 intellectual property rights filed based on RDI conducted in designated areas by 31 March 2021	4 intellectual property rights filed based on RDI conducted in designated areas by 31 March 2022	16 intellectual property rights filed based on RDI conducted in designated areas by 31 March 2022	+12	Achieved	This is a relatively new indicator with little previous baseline information to use for planning. However, a higher number of IPRs filed is always favourable.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/21	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
	Technology demonstrations, prototypes, products and services developed	Number of technology demonstrations, prototypes, products and services developed	New indicator	18 technology demonstrations, prototypes, products and services developed in designated energy, space, Innovation Priorities and Instruments, and bioeconomy areas by 31 March 2021	10 technology demonstrations, prototypes, products and services developed in designated energy, space, Innovation Priorities and Instruments, and bioeconomy areas by 31 March 2022	100 technology demonstrations, prototypes, products and services developed in designated energy, space, Innovation Priorities and Instruments, and bioeconomy areas by 31 March 2022	+90	Achieved	It is difficult to predict when or whether research is going to lead to a prototype, pilot, demonstrator, etc. and targets were therefore set on the basis of research that seemed close to reaching application. However, sometimes knowledge application products are developed faster than expected.
Knowledge utilisation for economic development in (a) revitalising existing (traditional) industries and (b) stimulating R&D-led development	Deployed stationary fuel cells and/or other clean energy technologies	Number of stationary fuel cell systems/clean energy technologies deployed in partnership with local and district municipalities in rural and informal settlements	New indicator	2 stationary fuel cell systems/clean energy technologies deployed in partnership with local and district municipalities in rural and informal settlements by 31 March 2021	2 stationary fuel cell systems/clean energy technologies deployed in partnership with local and district municipalities in rural and informal settlements by 31 March 2022 (non-cumulative target)	2 stationary fuel cell systems/clean energy technologies deployed in partnership with local and district municipalities in rural and informal settlements by 31 March 2022	0	Achieved	n/a

Outcomes	Outputs	Output indicator	Audited actual performance 2019/21	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
	SMMEs assisted/supported with business development and commercialisation	Number of SMMEs contracted and/or assisted for business development and commercialisation		22 SMMEs assisted with business development and commercialisation by 31 March 2021	9 SMMEs assisted with business development and commercialisation by 31 March 2022	10 SMMEs assisted with business development and commercialisation by 31 March 2022	+1	Achieved	This is a relatively new indicator with little previous baseline information to use for planning.
	Commercial outputs in designated areas	Number of commercial outputs in designated areas	11 commercial outputs in designated areas by 31 March 2020	15 commercial outputs in designated areas by 31 March 2021	4 commercial outputs in designated areas by 31 March 2022	12 commercial outputs in designated areas by 31 March 2022	+8	Achieved	Uptake was better than expected.
	Black emerging farmers benefiting from technology/innovation support programmes	Number of black emerging farmers (subsistence, small-scale, and potential commercial farmers) benefiting from technology/innovation support programmes	New indicator	71 black emerging farmers (subsistence, small-scale, and potential commercial farmers) benefiting from technology/innovation support programmes by 31 March 2021	200 black emerging farmers benefiting from technology/innovation support programmes by 31 March 2022	845 black emerging farmers benefiting from technology/innovation support programmes by 31 March 2022	+645	Achieved	A number of training projects could not take place as planned in 2020 owing to Covid-19 restrictions and were therefore moved to the 2021/22 financial year; when restrictions were less onerous. Conditions for seasonal crops were also better.

Linking performance with budgets

Subprogramme	Detail for Programme 2 – Technology Innovation for the year ended 31 March 2022					
	2021/22			2020/21		
	Final appropri- ation	Actual expendi- ture	Variance	Final appropri- ation	Actual expendi- ture	Variance
	R'000	R'000	R'000	R'000	R'000	
2.1 Space Science	289,056	286,289	2,767	250,634	241,741	8,893
2.2 Hydrogen and Energy	184,867	184,782	85	185,829	184,519	1,310
2.3 Bio-economy	237,879	237,106	772	228,148	226,997	1,151
2.4 Innovation Priorities and Instruments	954,618	953,934	684	675,039	671,945	3,094
2.5 National Intellectual Property Management Office	54,390	53,316	1,074	53,586	51,021	2,565
2.6 Office of the DDG:Technology Innovation	4,207	4,186	21	3,829	3,618	211
Total	1,725,017	1,719,613	5,404	1,397,065	1,379,841	17,214

Strategy to address areas of underperformance

There were no areas of underperformance.

Changes to planned annual targets

No changes were made to planned annual targets during the year under review.

PROGRAMME 3: INTERNATIONAL COOPERATION AND RESOURCES

Purpose

The purpose of this Programme is to develop, promote and manage international partnerships that strengthen the NSI and enable the exchange of knowledge, capacity and resources between South Africa and its international partners, particularly in Africa, in support of South African foreign policy through science, knowledge and innovation diplomacy.

Components

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 science, technology and innovation

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 Southern African Development Community (SADC) and African Union (AU) programmes, and in broader multilateral STI partnerships, with a strategic focus on South-South cooperation and the Sustainable Development Goals (SDGs).

Overseas Bilateral Cooperation Promotes and facilitates South Africa's bilateral STI cooperation with partners in Europe, the Americas, Asia and Australasia, especially for STI human capacity development, for collaborative research and innovation, and to secure partners' support for joint cooperation with other African partners. Furthermore, to influence and promote trilateral research cooperation.

Institutional outcomes to which the Programme contributes

- A transformed, inclusive, responsive and coherent NSI.
- Human capabilities and skills for the economy and for development.
- Knowledge utilisation for economic development in (a) revitalising existing (traditional) industries and (b) stimulating R&D-led development.
- Innovation in support of a capable and developmental state.

TABLE 7: PROGRAMME 3 – INTERNATIONAL COOPERATION AND RESOURCES

Achieved		Partially achieved			Not achieved				
Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
A transformed, inclusive, responsive and coherent NSI	International resource-leveraging engagements undertaken by the Department	Number of international resource-leveraging engagements undertaken by the Department	New indicator	46 international resource-leveraging engagements undertaken by the Department	43 dedicated international resource-leveraging engagements undertaken 31 March 2022 (non-cumulative target)	48 dedicated international resource-leveraging engagements undertaken 31 March 2022	+5	Achieved	Since engagements with international partners were virtual, there were more opportunities for engagement.
Human capabilities and skills for the economy and for development	South African students participating in international training programmes as part of cooperation initiatives facilitated by the DSI	Number of South African students participating in international training programmes	684 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	342 new South African students participating in international training programmes as part of cooperation initiatives facilitated by DSI by 31 March 2021	326 new South African students participating in international training programmes as part of cooperation initiatives facilitated by DSI by 31 March 2022 (non-cumulative target)	706 new South African students participating in international training programmes as part of cooperation initiatives facilitated by DSI by 31 March 2022	+380	Achieved	The target was exceeded owing to improved cooperation and coordination between the DSI, DHET and NRF on internationally leveraged human capital development opportunities for South Africans.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
A transformed, inclusive, responsive and coherent NSI	Capacity-building initiatives for international cooperation specifically targeting historically disadvantaged institutions and individuals	Number of capacity-building initiatives for international cooperation specifically targeting historically disadvantaged institutions and individuals	New indicator	17 capacity-building initiatives for international cooperation specifically targeting historically disadvantaged institutions and individuals by 31 March 2021	32 capacity-building initiatives for international cooperation specifically targeting historically disadvantaged institutions and individuals by 31 March 2022 (non-cumulative target)	24 capacity-building initiatives for international cooperation specifically targeting historically disadvantaged institutions and individuals by 31 March 2022	-8	Not achieved	A holistic strategic approach to the inclusion of historically disadvantaged institutions was not emphasised in engagements on international opportunities.
	International policy dialogues and technical exchanges to support the policy intents of the White Paper on STI	Number of international policy dialogues and technical exchanges to support the policy intents of the White Paper on STI	32 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 facilitated by the DSI by 31 March 2020	65 international policy dialogues and technical exchanges to support the policy intents of the White Paper on STI by 31 March 2021	34 international policy dialogues and technical exchanges to support the policy intents of the White Paper on STI by 31 March 2022 (non-cumulative target)	76 international policy dialogues and technical exchanges the policy intents of the White Paper on STI by 31 March 2022	+42	Achieved	Since engagements with international partners were virtual, there were more opportunities for engagement.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Knowledge utilisation for economic development in (a) revitalising existing (traditional) industries and (b) stimulating R&D-led industrial development	STI initiatives targeting the objectives of Agenda 2063 supported	Number of STI initiatives targeting objectives of Agenda 2063 supported	New indicator	18 new STI initiatives targeting objectives of Agenda 2063 supported by 31 March 2021	15 new STI initiatives targeting objectives of Agenda 2063 supported by 31 March 2022 (non-cumulative target)	15 new STI initiatives targeting objectives of Agenda 2063 supported by 31 March 2022	0	Achieved	None
	STI initiatives targeting the objectives of the SADC Regional Indicative Strategic Development Plan (RISDP) supported	Number of STI initiatives targeting the objectives of the SADC RISDP supported	New indicator	17 new STI initiatives targeting the objectives of the SADC RISDP supported by 31 March 2021	17 new STI initiatives targeting the objectives of the SADC RISDP supported by 31 March 2022 (non-cumulative target)	20 new STI initiatives targeting the objectives of the SADC RISDP supported by 31 March 2022	+3	Achieved	Since engagements with international partners were virtual, there were more opportunities for engagement.
	Bilateral STI plans of action implemented with African partners	Number of bilateral STI plans of action implemented with African partners	New indicator	11 new bilateral STI plans of action implemented with African partners by 31 March 2021	6 STI plans of action implemented with bilateral African partners by 31 March 2022 (non-cumulative target)	17 STI plans of action implemented with bilateral African partners by 31 March 2022	+11	Achieved	Since engagements with international partners were virtual, there were more opportunities for engagement.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
A transformed, inclusive, responsive and coherent NSI	Engagements with global science leaders to advance national priorities in multilateral forums	Number of engagements with global science leaders to advance national priorities in multilateral forums	New indicator	12 engagements with global science leaders to advance national priorities in multilateral forums by 31 March 2021	12 engagements with global science leaders to advance national priorities in multilateral forums by 31 March 2022 (non-cumulative target)	15 engagements with global science leaders to advance national priorities in multilateral forums by 31 March 2022	+3	Achieved	Since engagements with international partners were virtual, there were more opportunities for engagement.
	International STI initiatives focused on Sustainable Development Goals (SDGs) supported by South Africa	Number of international STI initiatives focused on SDGs supported by South Africa	New indicator	8 new international STI initiatives focused on SDGs supported by South Africa by 31 March 2021	8 new international STI initiatives focused on SDGs supported by South Africa by 31 March 2022 (non-cumulative target)	8 new international STI initiatives focused on SDGs supported by South Africa by 31 March 2022	0	Achieved	None

Linking performance with budgets

Subprogramme	Detail for Programme 3 – International Cooperation and Resources for the year ended 31 March 2022					
	2021/22			2020/21		
	Final appropriation	Actual expenditure	Variance	Final appropriation	Actual expenditure	Variance
	R'000	R'000	R'000	R'000	R'000	
3.1 Multilateral Cooperation and Africa	28,972	28,477	495	27,551	26,395	1,156
3.2 International Resources	67,082	65,008	2,074	58,601	57,667	934
3.3 Overseas Bilateral Cooperation	34,176	32,376	1,800	26,974	24,393	2,581
3.4 Office of the DDG: International Cooperation and Resources	6,046	5,948	98	6,176	5,774	402
Total	136,276	131,808	4,468	119,302	114,229	5,073

Strategy to address areas of underperformance

The following deliverable in Programme 3 (International Cooperation and Resources) was identified as an area of underperformance:

- Number of capacity-building initiatives for international cooperation specifically targeting historically disadvantaged institutions and individuals.

The underperformance of this deliverable will be addressed as follows:

- The Programme has to improve its strategic approach towards the inclusion of historically disadvantaged institutions in its engagements on international opportunities.

Changes to planned annual targets

No changes were made to planned annual targets during the year under review.

PROGRAMME 4: RESEARCH DEVELOPMENT AND SUPPORT

Purpose

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

Components

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

The chief directorate has three directorates managing thematic priorities aligned to its focus areas, namely, Research Development, Science Promotion, and Research Support.

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 component also promotes the development and strengthening of basic or foundational sciences, (such as physics, chemistry, biological and life sciences, geographic and geological sciences), theoretical and computational sciences, data sciences, and human and social sciences, including digital humanities.

The chief directorate has two directorates managing thematic priorities aligned to its focus areas, namely, Infrastructure and Basic Sciences.

Science Missions promotes the development of research, the production of scientific knowledge, and human capital in science areas in which South Africa enjoys a geographic advantage. These areas include the dynamics of climate change and its impact on Earth systems, Antarctic and marine research, the palaeosciences and indigenous knowledge systems.

The chief directorate has four directorates managing thematic priorities aligned to its focus areas, namely, Marine, Polar Research and Palaeosciences; Knowledge Management; Indigenous Knowledge Policy and Advocacy and Earth Systems Sciences.

Astronomy supports the development of astronomical sciences around the new Multiwavelength Astronomy Strategy. The strategy highlights the current status of astronomy in South Africa, its importance to the South African socio-economic landscape, the astronomy heritage in South Africa and how this could be further strengthened, and a strategic approach for continued investments in astronomy in South Africa. The strategy sets out strategic objectives and a strategic agenda defined by the key priority areas for astronomy, also outlining relevant cross-cutting support programmes needed to give effect to the shared vision.

The chief directorate has two directorates managing thematic priorities aligned to its focus areas, namely, Multiwavelength Astronomy, and the Astronomy Management Authority.

Institutional outcomes to which the Programme contributes

The Programme contributes to the following institutional outcomes:

- Human capabilities and skills for the economy and for development.
- A transformed, inclusive, responsive and coherent NSI.
- Increased knowledge generation and innovation output.

TABLE 8: PROGRAMME 4 – RESEARCH DEVELOPMENT AND SUPPORT

										Partially achieved		Not achieved	
										Achieved			
Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation				
Human capabilities and skills for the economy and for development	PhD students awarded bursaries annually	Number of PhD students awarded bursaries annually as reflected in the reports from the NRF and other relevant entities	2 991 PhD students awarded bursaries annually as reflected in the reports from the NRF and other relevant entities by 31 March 2020	303 PhD students awarded bursaries annually as reflected in the reports from the NRF and other relevant entities by 31 March 2021	2 000 PhD students awarded bursaries annually as reflected in the reports from the NRF and other relevant entities by 31 March 2022 (cumulative target)	2 527 PhD students awarded an annual bursary as reflected in the reports from the NRF and other entities by 31 March 2022	+527	Achieved	The target was exceeded by 26,3%. It is difficult to make accurate projections of the number of PhD students versus pipeline (honours and master's) students to be supported as such numbers are ultimately dependent on the demand, i.e. the number of applications in each category.				
	Pipeline postgraduate students awarded bursaries annually	Number of pipeline postgraduate students awarded bursaries annually as reflected in the reports from the NRF and other relevant entities	8 632 pipeline postgraduate students awarded bursaries annually as reflected in the NRF and other relevant entities by 31 March 2020	326 pipeline postgraduate students awarded bursaries annually as reflected in the NRF and other relevant entities by 31 March 2021	6 200 pipeline postgraduate students awarded bursaries annually as reflected in the NRF and other relevant entities by 31 March 2022 (cumulative target)	5 643 (2 572 honours + 3 071 master's) pipeline postgraduate students awarded an annual bursary as reflected in the reports from the NRF and other relevant entities by 31 March 2022	-555	Not achieved	Actual performance fell short of the target by 8,9%. It is difficult to make accurate projections of the number of PhD students versus pipeline (honours and master's) students to be supported as such numbers are ultimately dependent on the demand, i.e. the number of applications in each category.				

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
A transformed, inclusive, responsive and coherent NSI	Graduates and students placed in DSI-funded work preparation programmes	Number of graduates and students placed in DSI-funded work preparation programmes in SETI institutions	1 091 graduates and students placed in DSI-funded work preparation programmes in SETI institutions by 31 March 2020	1 085 graduates and students placed in DSI-funded work preparation programmes in SETI institutions by 31 March 2021	750 graduates and students placed in DSI-funded work preparation programmes in SETI institutions by 31 March 2022 (cumulative target)	1 194 graduates and students placed in DSI-funded work preparation programmes in SETI institutions	+444	Achieved	The target was exceeded by 59,2% owing to the low attrition rate. Interns remained in the Programme for longer than in previous years as, owing to the economic effects of the Covid-19 pandemic, they were unable to find jobs. In addition, more interns were appointed in Q4.
	Research infrastructure grants	Number of research infrastructure grants awarded	33 research infrastructure grants awarded as per award letters by 31 March 2020	30 research infrastructure grants awarded by 31 March 2021	25 research infrastructure grants awarded by 31 March 2022 (non-cumulative target)	36 grants were made from the 2021/22 RDI funds	+11	Achieved	21 grants were awarded against the National Equipment Programme (NEP) budget allocation for 2021/22. Smaller NEP grant funding applications were received, so more grants could be made.
	Broadband capacity	Total available broadband capacity provided by SANReN per annum	4 522,01 Gbps total available broadband capacity provided by SANReN by 31 March 2020	5 474 Gbps total available broadband capacity provided by SANReN by 31 March 2021	5 800 Gbps total available broadband capacity provided by SANReN by 31 March 2022 (non-cumulative target)	5 872,39 Gbps total available broadband capacity provided by SANReN by 31 March 2022	+72,39 Gbps	Achieved	The target was exceeded owing to the upgrade of the capacity of some regional links from 1 Gbps to 10 Gbps to meet increasing demand. The activation of a 100G circuit was delivered sooner than expected.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Increased knowledge generation and innovation output	Researchers awarded research grants	Number of researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports	3 205 researchers awarded research grants annually through NRF-managed programmes as reflected by the NRF project reports by 31 March 2020	3 000 researchers awarded research grants through NRF-managed programmes as reflected by the NRF project reports by 31 March 2021	3 000 researchers awarded research grants through NRF-managed programmes as reflected by the NRF project reports by 31 March 2022 (cumulative target)	3 201 researchers awarded research grants through NRF-managed programmes as reflected by the NRF project reports by 31 March 2022	+201	Achieved	The target was exceeded by 6,7%. It could not be accurately forecast as it depends on the number of applications and the sizes of grants requested and awarded. Eased lockdown regulations also made it possible for researchers to undertake certain research activities again, hence the significant increase in the number of researchers supported.
	Internationally accredited research articles from researchers awarded research grants through NRF-managed programmes	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	7 255 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	8 150 internationally accredited research articles from researchers awarded research grants by 31 March 2021	7 000 internationally accredited research articles from researchers awarded research grants by 31 March 2022 (non-cumulative target)	9 116 internationally accredited research articles from researchers awarded research grants by 31 March 2022	+2,116	Achieved	The target was exceeded by 30%. The number of research articles published per researcher was higher than anticipated. This number fluctuates from year to year. Moreover, annual performance cannot be predicted or managed within closer margins owing to unpredictability of the publishing processes.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
	S-Band science mode receivers installed	Number of additional receivers installed on the MeerKAT telescope to enhance the performance of the MeerKAT telescope	8 large survey project science mode receivers installed on MeerKAT correlator	64 S-Band science mode receivers installed on MeerKAT by 31 March 2021	Production plan for the L-band receivers for the additional 20 MeerKAT antennas approved by SKA SA Project Director by 31 March 2022 (non-cumulative target)	Production plan for the L-band receivers for the additional 20 MeerKAT antennas approved by SKA SA Project Director by 31 March 2022	0	Achieved	n/a
	Regulations approved by Minister under the Protection, Promotion, Development and Management of Indigenous Knowledge Act (IK Act)	Number of components of the IK legal architecture implemented	New indicator	The Minister could not approve the IK Act Regulations due to internal delays in finalising the Regulations for consultations to take place. On 10 March 2021, Exco recommended that the Regulations be subjected to consultation.	Launch of the National Recordal System for registration and access to indigenous knowledge by 31 March 2022 (non-cumulative target)	The IK Registration System, formerly known as the National Recordal System, was launched on 25 March 2022.	0	Achieved	n/a

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
		Number of initiatives conducted to promote public awareness of and engagement with science throughout the country, as reflected in the reports of the NRF and other implementing and collaborative partners.	New indicator	In line with advice from Legal Services, the Minister must also approve the consultation process for the Regulations. When approval has been obtained, the DSI will embark on a widespread consultation process.	9 initiatives promoting public awareness of and engagement with science conducted, as reflected in the reports of the NRF and other implementing and collaborative partners by 31 March 2022 (cumulative target)	9 initiatives promoting public awareness of and engagement with science conducted, as reflected in the reports of the NRF and other implementing and collaborative partners by 31 March 2022	0	Achieved	n/a

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
	South African science survey report	First South African public relationship with science survey report published	New indicator	Sample and technical report frameworks for the first South African public relationship with science survey was approved by 31 March 2021	Data collection instruments for the first South African public relationship with science survey produced by 31 March 2022 (non-cumulative target)	Data collection instruments for the first South African public relationship with science survey produced by 31 March 2022	0	Achieved	n/a
	Oversight over NRF and ASSAf to ensure that they respond to government priorities	Number of strategic and technical engagements with the NRF, ASSAf and SACNASP to ensure alignment to national priorities	New indicator	9 strategic and technical engagements with NRF, SACNASP and ASSAf to ensure alignment to national priorities by 31 March 2021	12 strategic and technical engagements between NRF, SACNASP and ASSAf to [ensure] alignment with national priorities by 31 March 2022 (non-cumulative target)	12 strategic and technical engagements between NRF, SACNASP and ASSAf to ensure alignment with national priorities by 31 March 2022	0	Achieved	n/a

Linking performance with budgets

Subprogramme	Detail for Programme 4 – Research Development and Support for the year ended 31 March 2022					
	2021/22			2020/21		
	Final appropri- ation	Actual expendi- ture	Variance	Final appropri- ation	Actual expendi- ture	Variance
	R'000	R'000	R'000	R'000	R'000	
4.1 Human Capital and Science promotion	2,711,737	2,710,695	1,042	2,306,016	2,305,758	258
4.2 Science Missions	187,522	186,692	830	218,955	215,718	3,237
4.3 Basic Science and Infrastructure	1,042,175	1,041,969	206	687,600	687,217	383
4.4 Astronomy	1,050,709	1,049,952	757	520,334	520,185	149
4.5 Office of the DDG: Research Development and Support	2,918	2,135	783	2,813	2,098	715
Total	4,995,061	4,991,443	3,618	3,735,718	3,730,976	4,742

Strategy to address areas of underperformance

The following deliverable in Programme 4 (Research Development and Support) was identified as an area of underperformance:

- Number of pipeline postgraduate students awarded bursaries annually as reflected in the reports from the NRF and other relevant entities.

The target was missed by 8,9%.

The underperformance on this deliverable will be addressed as follows:

- A conservative but reasonably fair target has been set for 2022/23, and more attention will be given to the pipeline (honours and master's) bursary target than to the PhD bursary target, which was exceeded.

Changes to planned annual targets

No changes were made to planned annual targets during the year under review.

PROGRAMME 5: SOCIO-ECONOMIC INNOVATION PARTNERSHIPS

Purpose

The purpose of this Programme is to enhance the growth and development priorities of government through targeted S&T-based innovation interventions and the development of strategic partnerships with other government departments, industry, research institutions and communities and the provision of statistics and analysis for purposes of system-level monitoring and evaluation.

Components

Technology Localisation, Beneficiation and Advanced Manufacturing provides policy, strategy and direction-setting support for the R&D-led growth of strategic sectors of the economy and funds technology and innovation development programmes to advance strategic medium and long-term sustainable economic growth and sector development priorities, as well as government service delivery through the following value-adding functions:

- Investing in the medium and long-term knowledge-generation capabilities of the NSI in targeted innovation areas.
- In partnership with other government departments and economic actors, spearheading focused efforts that exploit knowledge capabilities for economic benefit. The economic benefit includes the development of advanced technologies and industries, improved government service delivery, improved productivity and competitiveness, and technology transfer and support to SMMEs and manufacturing firms in the supply chains of large-scale public procurement programmes.

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

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

The chief directorate has three directorates managing thematic priorities aligned to its focus areas, namely, Environmental Services and Technologies; Sector and Local Innovation; and Information Communication and Technology.

Innovation for Inclusive Development provides leadership and guidance for harnessing science, technology and innovation for the delivery of basic services, local economic development and inculcating the culture of innovation across government through the following interventions:

- Leading the development, demonstration, transfer and diffusion of innovative solutions towards supporting evidence-based policy service delivery making and practice.
- Strengthening STI capacity, maturity and collaboration with local government and sector departments towards a capable and innovative state. This includes the provision of decision-support tools and knowledge products to advance evidence-based service delivery decision making.
- Coordinating collaborative science, technology and innovation catalytic local industries, clusters and value-chains in line with provincial and local development plans.
- Coordinating and inculcating science, technology and innovation initiatives in support of the District Development Model.

The chief directorate has two directorates managing thematic priorities aligned to its focus areas, namely, Technology for Sustainable Livelihoods, and Science and Technology for Sustainable Human Settlements.

Science and Technology Investment leads and supports the development of indicators and instruments for measuring and monitoring investments in S&T and the performance of the NSI, and ways of strengthening the NSI and innovation policy. This includes an annual R&D survey, innovation measurement, the development of S&T indicators, the development of databases and information systems such as the Research Information Management System and the national science and technology expenditure tables, and the implementation of section IID of the Income Tax Act, 1962, to promote private-sector R&D investment.

The chief directorate has three directorates managing thematic priorities aligned to its focus areas, namely, Research and Development Tax Incentive, Research and Development Planning, and Science and Technology Indicators.

Institutional outcomes to which the Programme contributes

- Innovation in support of a capable and developmental state.
- Knowledge utilisation for inclusive development.
- Human capabilities and skills for the economy and for development.
- Increased knowledge generation and innovation output.
- Knowledge utilisation for economic development in (a) revitalising existing (traditional) industries and (b) stimulating R&D-led industrial development

TABLE 9: PROGRAMME 5 – SOCIO-ECONOMIC INNOVATION PARTNERSHIPS

Not achieved									
Partially achieved					Not achieved				
Achieved									
Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Innovation in support of a capable and developmental state	Knowledge products	Number of knowledge products on innovation for inclusive development published	At least 6 knowledge products on innovation for inclusive development published between 1 April 2015 and 31 March 2020	At least 4 knowledge products on innovation for inclusive development published by 1 April 2020 and 31 March 2021	4 knowledge products on innovation for inclusive development published by 31 March 2022 (cumulative target)	4 knowledge products on innovation for inclusive development published by 31 March 2022	0	Achieved	n/a
Knowledge utilisation for inclusive development	Decision-support interventions	Number of decision-support interventions introduced and maintained	At least 10 decision-support systems maintained and improved by 31 March 2020	At least 10 decision-support systems maintained and improved by 31 March 2021	6 decision-support systems introduced, maintained and improved by 31 March 2022 (cumulative target)	7 decision-support systems introduced, maintained and improved by 31 March 2022	+1	Achieved	The target was exceeded because a number of new decision-support interventions were contracted ahead of their scheduled commencement date in line with the consolidation of certain contracts.
	Learning interventions (seminars, policy round tables)	Number of learning interventions (seminars/policy round tables) hosted	At least 9 learning interventions (seminars) generated by 31 March 2020	At least 4 learning (seminars/policy round tables) hosted by 31 March 2021	3 learning interventions (seminars/policy round tables) hosted by 31 March 2022 (cumulative target)	4 learning interventions (seminars/policy round tables) hosted by 31 March	+1	Achieved	The target was exceeded because an opportunity arose during the year to host an additional, unplanned seminar that was considered important for the work of Innovation for Inclusive Development.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Human capabilities and skills for the economy and for development	High-level human capital development built for competitiveness and new industry development	Number of high-level research students (honours, master's and doctoral students) fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs and the Industry Innovation Programme (incl. SIFs) and the green economy	At least 231 master's and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs and the Industry Innovation Programme (incl. SIFs) by 31 March 2020	At least 330 honours, master's and doctoral students fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, the Industry Innovation Programme (incl. SIFs and green economy) by 31 March 2021	392 high-level research students (of which 57 at PhD level) fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, the Industry Innovation Programme (incl. SIFs and green economy) by 31 March 2022 (non-cumulative target)	287 high-level research students (of which 57 at PhD level) fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, the Industry Innovation Programme (incl. SIFs and green economy) by 31 March 2022	-105	Not achieved	Significant funds from technology development projects (e.g. the Advanced Metals Initiative and the Advanced Manufacturing Technology Strategy) were allocated to technology diffusion projects (e.g. the Technology Stations Programme and the Technology Localisation Implementation Unit). There were also difficulties in verifying the number of students.
Increased knowledge generation and innovation output	Knowledge and innovation products added to the industrial development and green economy IP portfolios through fully funded or	Number of knowledge and innovation products added to the industrial development and green economy IP portfolios through fully funded or	At least 57 industrially relevant knowledge and innovation products (patents, prototypes, technology demonstrators or technology	An annual total of at least 70 industrially relevant knowledge and innovation products (patents, prototypes, technology demonstrators or technology	60 industrially relevant knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added	116 industrially relevant knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added	+56	Achieved	There was intentional emphasis on education and active sourcing of potential innovation products that could be reported and included in the register.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
		co-funded research initiatives	transfer packages) added to the industrial development and green economy IP portfolio by 31 March 2020	transfer packages) added to the industrial development and green economy IP portfolio by 31 March 2021	to the industrial development and green economy IP portfolio by 31 March 2022 (cumulative target)	to the industrial development and green economy IP portfolio by 31 March 2022 (cumulative target)			
	Funding instruments to increase localisation, competitiveness and R&D-led industry development	Number of instruments funded in support of increased localisation, competitiveness and R&D-led industry development	At least 9 instruments funded in support of increased localisation, competitiveness and R&D-led industry development by 31 March 2020	At least 6 instruments funded in support of increased localisation, competitiveness and R&D-led industry development by 31 March 2021	5 instruments funded in support of increased localisation, competitiveness and R&D-led industry development in aerospace, advanced manufacturing, chemicals, mining, advanced metals, and ICTs, Industry Innovation Programme and the Sector Innovation Fund by 31 March 2022 (cumulative target)	6 instruments funded in support of increased localisation, competitiveness and R&D-led industry development in aerospace, advanced manufacturing, chemicals, mining, advanced metals, and ICTs, Industry Innovation Programme and the Sector Innovation Fund by 31 March 2022	+1	Achieved	The additional Presidential Youth Employment Initiative funding for the experiential training programme continued into the 2021/22 financial year.

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
Knowledge utilisation for inclusive development	Innovation support interventions funded or co-funded that strengthen with provincial or rural innovation systems	Number of innovation support interventions funded or co-funded that strengthen provincial or rural innovation systems	16 innovation support interventions funded or co-funded that strengthen provincial or rural innovation systems between 1 April and 31 March 2020	At least 23 innovation support interventions funded or co-funded that strengthen provincial or rural innovation systems between 1 April 2020 and 31 March 2021	14 innovation support interventions funded or co-funded that strengthen provincial or rural innovation systems between 1 April 2020 and 31 March 2022 (cumulative target)	26 innovation support interventions funded or co-funded that strengthen provincial or rural innovation systems between 1 April 2020 and 31 March 2022	+12	Achieved	The target was exceeded because there were delays with a number of interventions. The contracts were extended so that the activities could be completed in the 2021/22 financial year.
Innovation in support of a capable and developmental state	Statistical reports and policy briefs approved by Exco for publication and/or submitted to Cabinet and/or disseminated to policy audience	Number of statistical reports and policy briefs approved by Exco for publication and/or submitted to Cabinet and/or disseminated to policy audience	6 statistical reports or policy briefs approved by Exco for publication and/or submitted to Cabinet by 31 March 2020	6 statistical reports or policy briefs approved by Exco for publication and/or submitted to Cabinet by and/or disseminated to policy audience by 31 March 2021	6 statistical reports or policy briefs approved by Exco for publication and/or submitted to Cabinet by and/or disseminated to policy audience by 31 March 2022 (cumulative target)	6 statistical reports or policy briefs approved by Exco for publication and/or submitted to Cabinet and/or disseminated to policy audience by 31 March 2022	0	Achieved	n/a
Knowledge utilisation for economic development in (a) revitalising existing (traditional) industries and	Companies accessing the R&D tax incentive	Turnaround time in providing preapproval decisions on applications for the R&D tax incentive	Preapproval decisions provided within 90 days from date of receipt on 11% (or 12) of the 106 applications received for	Preapproval decisions provided within 90 days from date of receipt for 20.2% (or 23) of the 114 of applications for the R&D	Preapproval decisions provided within 90 days from date of receipt for 80% of applications for the R&D tax incentive	Preapproval decisions provided within 90 days from date of receipt for 54% (or 67) of 124 applications for the R&D tax incentive	Preapproval decisions provided within 90 days from date of receipt not achieved	Not achieved	The quality of information received from applicants is still problematic. A lack of automation and staff shortages have an effect on the monitoring and processing of a

Outcomes	Outputs	Output indicator	Audited actual performance 2019/20	Audited actual performance 2020/21	Planned annual target 2021/22	Actual achievement 2021/22	Deviation from planned target	Status	Reasons for deviation
(b) stimulating R&D-led industrial development			the R&D tax incentive received between 1 January 2019 and 31 December 2019	tax incentive received between 1 January 2020 and 31 December 2020	received between [1 January 2021 and 31 December 2021] (non-cumulative target)	received between 1 January 2021 and 31 December 2021	for 26% (or 32) of 124 applications for the R&D tax incentive received between 1 January 2021 and 31 December 2021		pplications.
Innovation in support of a capable and developmental state	Oversight over the CSIR and HSRC to ensure they respond to government priorities	Number of strategic and technical engagements with CSIR and HSRC to ensure alignment to national priorities	New indicator	8 strategic and technical engagements with CSIR and HSRC to ensure alignment to national priorities by 31 March 2021	8 strategic and technical engagements with CSIR and HSRC to ensure alignment to national priorities by 31 March 2022 (cumulative target)	10 strategic and technical engagements with CSIR and HSRC to ensure alignment to national priorities by 31 March 2022	+2	Achieved	Additional engagements were required for new counterparts at the HSRC and the CSIR and to deal with the range of issues covered. Additional engagements that contributed to strategic oversight in the form of workshops and issue-specific engagements (e.g. a decadal plan workshop, a meeting on organisational changes at CSIR and a workshop on science-to-policy) are excluded from the count.

Linking performance with budgets

Subprogramme	Detail for Programme 5 – Socio-Economic Innovation Partnerships for the year ended 31 March 2022					
	2021/22			2020/21		
	Final appropriation	Actual expenditure	Variance	Final appropriation	Actual expenditure	Variance
	R'000	R'000	R'000	R'000	R'000	
5.1 Sector Innovation and Green Economy	1,120,160	1,117,731	2,429	984,785	984,318	467
5.2 Innovation for Inclusive Development	399,889	399,215	674	383,903	332,556	51,347
5.3 Science and Technology Investment	39,139	39,007	132	31,139	30,664	475
5.4 Technology Localisation, Beneficiation and Advanced Manufacturing	254,728	251,799	2,929	326,980	325,739	1,241
5.5 Office of the DDG: Socio Economic Innovation Partnership	7,060	6,973	87	4,979	4,702	277
Total	1,820,977	1,814,725	6,252	1,731,786	1,677,979	53,807

Strategy to address areas of underperformance

The following deliverables in Programme 5 (Socio-economic Innovation Partnerships) were identified as areas of underperformance:

- Number of high-level research students (honours, master's and doctoral students) fully funded or co-funded in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, the Industry Innovation Programme (including SIFs) and the green economy. The target was 392, the actual performance was 287. The target was missed by 105.
- Turnaround time in providing preapproval decisions on applications for the R&D tax incentive. Of the 124 applications for the R&D tax incentive received between 1 January 2021 and 31 December 2021, 32 (26%) did not have preapproval decisions provided within 90 days from date of receipt.

The underperformance of these deliverables will be addressed as follows:

- The planning process for the funding or co-funding of high-level research students in designated niche areas (advanced manufacturing, aerospace, chemicals, mining, advanced metals, ICTs, the Industry Innovation Programme (incl. SIFs and green economy) will be improved with a greater emphasis on the breakdown of the key performance indicator target and of the technical indicator description definitions in the context of experienced validation difficulties.
- To ensure turnaround times are adhered to, ensure that the R&D tax incentive preapproval application process is automated and ensure that staff shortages are addressed by the better monitoring and processing of applications.

Changes to planned annual targets

No changes were made to planned annual targets during the year under review.

Approval

This is to confirm that the Executive Committee (Exco) of the Department of Science and Innovation discussed the Department's annual performance information report for the 2021/22 financial year at its meeting of 19 May 2022 and that Exco made inputs into the content of the report, which reflects the DSI's performance for the period covered in the report.



Phil Mjwara
Director-General

Date: 31 May 2022

5. TRANSFER PAYMENTS

The Department transfers funds to various entities in pursuit of its mandate. These entities assist the Department in achieving its objectives. The table below indicates the entities and the reasons transfers were made. The detailed information regarding the entities to which the transfers were made is disclosed fully in the Annexures to the Annual Financial Statements in Part E.5.

Programme 1: Administration

Organisation/ theme	Budget R'000	Actual expenditure R'000	Reason for transfer payment
Institutional and programme support	15,264	15,142	Assistance for research activities
Total	15,264	15,142	

Programme 2: Technology Innovation

Organisation/theme	Budget R'000	Actual expenditure R'000	Reason for transfer payment
Bio-economy Strategy	50,131	50,131	Implementation of the Bio-economy Strategy
Biofuels	9,130	9,130	Biofuels research
Emerging research areas	108,989	108,908	R&D into emerging research areas
Energy Grand Challenge	43,318	43,318	Support for R&D in the renewable energy sector
Health innovation	108,052	108,052	R&D for new health products and services
HIV and Aids prevention and treatment technologies	30,225	30,225	Research into technologies to prevent and combat HIV/Aids
Hydrogen Strategy – capital	81,199	81,199	Support research infrastructure in the hydrogen and energy sector
Hydrogen Strategy – current	42,580	42,580	Support R&D in the hydrogen and energy sector
Indigenous knowledge systems	6,599	6,569	Implementation of indigenous knowledge initiatives
Innovation projects	391,230	391,230	To promote IP management, regulation and commercialisation
International Centre for Genetic Engineering and Biotechnology	26,135	26,135	R&D of new health products
South African National Space Agency	202,193	202,193	To support the creation of an environment conducive to industrial development and space technology
Space science	74,829	74,674	R&D to support space science initiatives
Technology Innovation Agency	447,703	447,703	To stimulate and intensify technology innovation and commercialisation output
Support to offices of technology transfer	45,000	45,021	Intellectual Property Fund and capacitating offices of technology transfer
Total	1,667,313	1,667,068	

Programme 3: International Cooperation and Resources

Organisation/theme	Budget R'000	Actual expenditure R'000	Reason for transfer payment
Global Science: Bilateral Cooperation	16,670	16,670	Growing international partnerships with the aim of leveraging resources for R&D and human capital development
Global Science: International Resources	47,341	47,341	Growing international partnerships with the aim of leveraging resources for R&D and human capital development
Global Science: Multilateral Cooperation	10,493	10,493	Growing international partnerships with the aim of leveraging resources for R&D and human capital development
Total	74,504	74,504	

Programme 4: Research Development and Support

Organisation/theme	Budget R'000	Actual expenditure R'000	Reason for transfer payment
Academy of Science of South Africa	33,210	33,210	To promote innovative and independent scientific thinking
Astronomy	25,623	25,623	Support to radio and optical astronomy
Basic science development and support	36,946	36,946	Policy and institution building (10-year plan and centres of excellence)
Cyberinfrastructure	237,121	237,121	Operation and management of Centre for High Performance Computing initiatives and connectivity of research institutions
Human resource development	1,021,504	1,021,488	Implementation of human capital development initiatives
National Research Foundation	962,587	962,587	Supporting and promoting research through funding human resource development
Research and development infrastructure	758,280	758,280	Infrastructure development
Science awareness	91,643	90,617	Research and initiatives towards youth involvement in the science arena
South African Research Chairs Initiative	588,550	588,550	To fund research chairs in higher education institutions
Square Kilometre Array (SKA)	1,018,174	1,018,174	Infrastructure for the SKA project
Strategic science platforms	171,964	171,393	Strategic science platforms for research and development
Total	4,945,602	4,943,989	

Programme 5: Socio-economic Innovation Partnerships

Organisation/theme	Budget R'000	Actual expenditure R'000	Reason for transfer payment
Advanced Manufacturing Technology Strategy	45,214	45,214	Implementation of the Advanced Manufacturing Technology Strategy
Council for Science and Industrial Research	978,449	978,449	To provide science and technology services and solutions, and identify opportunities for new technologies to be further developed and exploited in the private and public sectors for commercial and social benefit
Environmental innovation	87,670	86,147	Identifying and initiating S&T programmes that support the growth of the environmental technologies and services sector in South Africa
Human Sciences Research Council	314,394	314,394	Conducting large-scale policy-relevant social science research
Information communication technology	41,821	41,817	<ul style="list-style-type: none"> Implementation of the South African ICT Research, Development and Innovation Roadmap. Facilitating policy and strategy development on R&D interventions that support the growth of the ICT sector (excluding the ICT retail sector)
Innovation for inclusive development	77,158	77,108	<ul style="list-style-type: none"> Development of indicators and instruments for measuring and monitoring investments in S&T and the performance of the national system of innovation. Support for experimentation with S&T-based innovations for tackling unemployment poverty and inequality through the creation of sustainable job and wealth opportunities and enhancing the delivery of basic services
Local manufacturing capacity	81,217	80,720	<ul style="list-style-type: none"> Support for technology localisation Assistance to local companies for them to develop their technology capabilities to enable them to leverage procurement opportunities under the infrastructure build programmes of the state-owned enterprises Funding for technology stations to render technology support to small and medium enterprises.
Local systems of innovation	15,047	15,047	<ul style="list-style-type: none"> Support for local innovation interventions and science parks Support for industry innovation partnerships
Mining research and development	63,506	63,506	Promotion of mining research and development
Research Information Management System (RIMS)	10,750	10,750	Information access for decision making – continued development and maintenance of RIMS
Resource-based industries	37,223	37,223	S&T policy, strategy and direction-setting support to harness value from South Africa's natural resources
Science and technology indicators	15,221	15,221	Develop and monitor science and technology indicators
Total	1,767,670	1,765,596	

6. CONDITIONAL GRANTS

The Department did not receive any conditional grants.

7. DONOR FUNDS

The Department received official development assistance (ODA) from the European Union. Below is a brief summary of the activities supported by these ODA partners in science and technology.

Name of donor	European Union
Full amount of the funding (R'000)	5 000
Period of the commitment	3 years
Purpose of the funding	ESASTAP 2020
Expected outputs	Strengthening technology research and innovation cooperation between Europe and South Africa
Actual outputs achieved	<ul style="list-style-type: none"> Promotion of reciprocal science, technology and innovation (STI) cooperation between South Africa (SA) and the European Union (EU) A number of strategic events and virtual information-sharing sessions were organised in in the 2021/22 financial year to highlight EU funding programmes. The events included the promotion of opportunities in the EU Framework Programmes for Research and Innovation, Eureka/Eurostars, COST and IST Africa, etc. The Department also highlighted support mechanisms available through ESASTAP that create an enabling environment for South African researchers and innovators to access EU funding opportunities. The DSI appointed a project manager for the ESASTAP platform to ensure the successful implementation of ESASTAP activities. The DSI facilitated the renewal of membership of the Science Business Network for three years from 24 March 2020 to 23 March 2023 to enable the Department to obtain access to strategic networks, contacts and activities for the purpose of positioning South Africa as a preferred partner for STI cooperation. The ESASTAP website played a critical role in ensuring effective dissemination of information to the South Africa research and innovation community. In view of the transition to digital activities, the ESASTAP website became the main platform for digital communication and profiling activities and events within the SA-EU STI cooperation.
Amount received in current period (R'000)	1 082
Amount spent by the Department (R'000)	1 082
Reasons for the funds unspent	All funds were spent

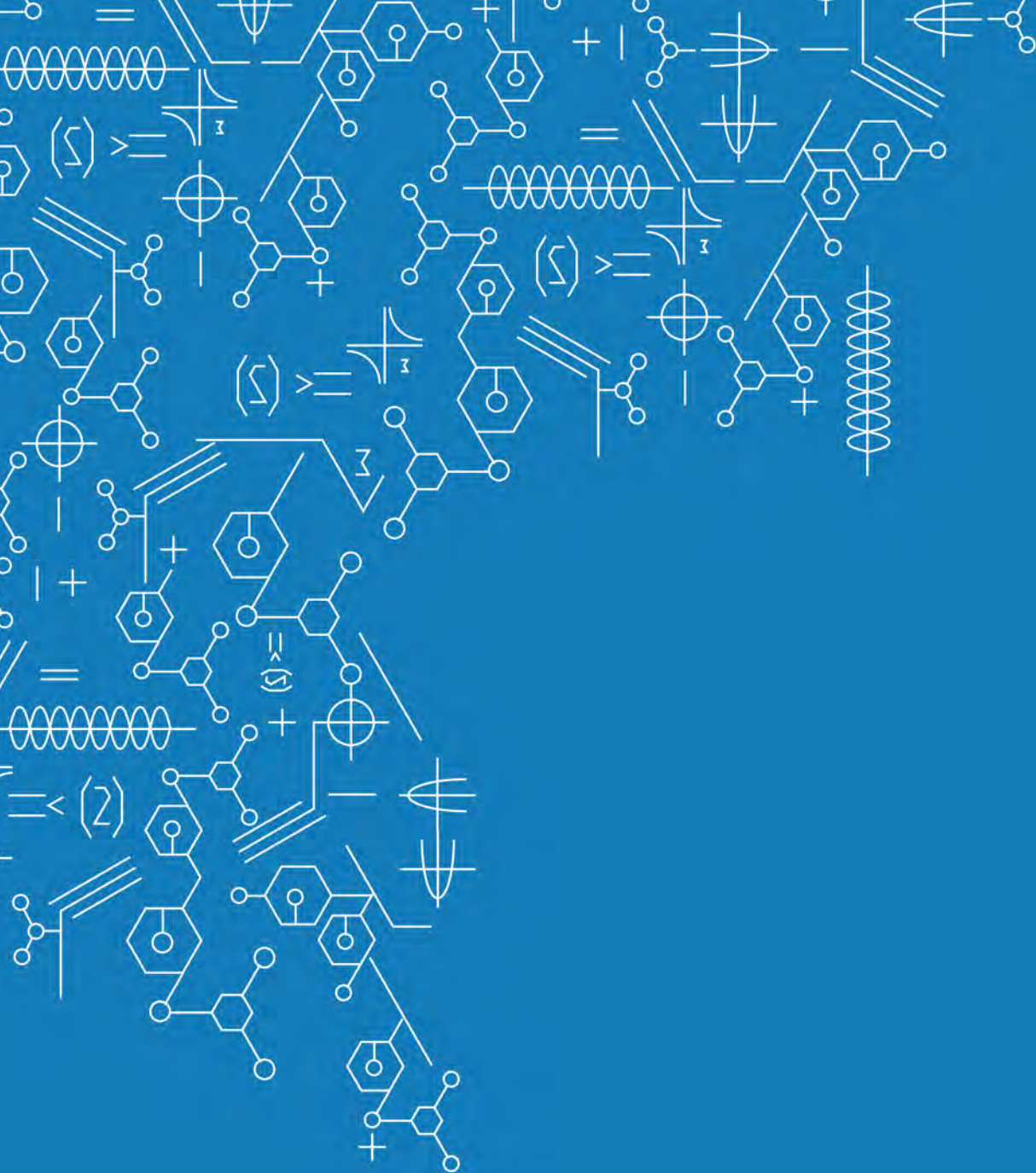
Name of donor	European Union
Full amount of the funding (R'000)	264 000
Period of the commitment	5 years
Purpose of the funding	Sector Budget Support – national system of innovation
Expected outputs	<ul style="list-style-type: none"> Integration of innovation in the municipal policy environment, innovative technology solutions for basic services, decision-support tools, innovation capacity building and innovation measurement in municipalities, e-participation in policy making and policy modelling platform for South Africa, National Survey on Health, Well-being, and Family Relations (SANSHEF) Run call for proposals process: To call for proposals from industry associations for partnerships for RDI programmes to address the competitiveness challenges of their particular industry
Actual outputs achieved	<ul style="list-style-type: none"> 24 innovation solutions selected to be demonstrated to municipalities, 18 decision-support tools selected, training provided to municipalities and more municipalities participating in the Municipal Innovation Maturity Index (MIMI) initiative. Implementation partners contracted to implement projects, e-Participation in Policy Making and Policy Modelling Platform for South Africa The SANSHEF survey was conducted and the results are expected later in the year. After a call for proposal contracts were concluded with industry associations for partnerships in RDI programmes to address the competitiveness challenges of their particular industry.
Amount received in current period (R'000)	68 740
Amount spent by the Department (R'000)	58 955
Reasons for the funds unspent	Funds were unspent due to delays in the process of contracting implementing partners under Viability and Validations for Innovations for Service Delivery Programme (VVISDP) component projects. Implementation partners are now contracted and have started with the implementation of their respective projects.
Monitoring mechanism by the donor	These funds are audited by Auditor-General or external auditors at the request of the donor.

8. CAPITAL INVESTMENT

8.1 CAPITAL INVESTMENT, MAINTENANCE AND ASSET MANAGEMENT PLAN

The Department has measures in place for effective and efficient asset management, including an asset management policy and an asset disposal strategy. These documents assist the Department to ensure structured asset management, particularly with regard to verifications, maintenance and asset refresh. To ensure that its assets are still in good working condition, the Department conducted two asset verifications during the year. The verifications assisted in identifying redundant and obsolete assets, which were disposed of. The Department procured new laptops to replace those that were damaged and obsolete, and to ensure that officials were able to work from home.

The Department disposed of five vehicles that were old and no longer economical to maintain. The Department plans to procure seven additional vehicles for messenger services to replace the ones disposed of.



PART

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GOVERNANCE

I. INTRODUCTION

The Department is committed to maintaining the highest standards of corporate governance, which are fundamental to the management of public finances and resources. The frameworks below are the main pillars of the Department's corporate governance arrangements.

2. RISK MANAGEMENT

The Department acknowledges that uncertainty and risk are an integral part of its activities and that not having mechanisms in place to identify and manage risks could result in the unavailability of services, a lack of information, financial loss, increased costs, loss of reputation and failure to meet strategic objectives.

The Department views enterprise risk management (ERM) as imperative for successful delivery on its mandate and its obligation to deliver value to stakeholders. The Department further recognises that identifying, understanding and managing risk in an enterprise-wide context will ensure accountability and sustainability, and that the management of enterprise risk will compel the Department to address adverse events in a proactive and timely manner, while exploiting the possible opportunities offered by future uncertainties.

Various processes have been instituted to ensure the commitment of the entire Department to ERM, and clear risk management roles and responsibilities have been defined. These include the provision of awareness sessions, the publication of articles in the Department's quarterly newsletter, and regular risk assessments with subsequent follow-ups.

The Department has an ERM directorate and an effective management system (policy, framework, strategy, guidebooks and annual implementation plan) for ERM.

To ensure the quality, integrity and reliability of the Department's ERM processes and responses, the Department has an Enterprise Risk Management Committee (ERMC) comprising four independent members and one ex officio member.

In the period under review, the ERMC's adequacy and effectiveness were assessed by means of an evaluation by management (introduced in the 2021/22 financial year) and by a self-assessment performed by the four independent members and one ex officio member, focusing on the following areas:

- The composition and quality of the committee.
- Its understanding of the Department, including risks.
- Its oversight role.
- Its processes and procedures.

The outcome of both evaluations was positive.

The Audit Committee Chairperson is a standing invitee to ERMC meetings. In the period under review, the ERMC continued to play an integral part in ensuring that the Department maintained and enhanced its ERM maturity level. The following table indicates the members of the ERMC and the meetings they attended in the period under review:

Name	Member status	Meetings attended	Notes
S Badat	Independent member (Chairperson)	5 of 5	Appointed for a three-year term with effect from 1 February 2021
M Lubega	Independent member	5 of 5	Appointed for a three-year term with effect from 1 February 2021
C Marais	Independent member	5 of 5	Reappointed for a second three-year term with effect from 1 February 2021
M Ramataboe	Independent member	5 of 5	Reappointed for a second three-year term with effect from 1 February 2021
D Mmakola	Ex officio member	1 of 1	Appointed as acting DDG: Institutional Planning and Support for the period 1 April 2020 to 31 May 2022
GSM Zwane	Ex officio member	3 of 4	Appointed as DDG: Institutional Planning and Support with effect from 1 June 2021
L Konar	Audit Committee Chairperson	3 of 3	Term of office as Audit Committee Chairperson ended on 31 January 2022
Z Monnagotla	Audit Committee Chairperson	1 of 2	Appointed as Audit Committee Chairperson with effect from 1 February 2022

The Department's Internal Audit Activity and the Audit Committee provide independent assurance of the Department's ERM processes, and advise on the effectiveness of risk management controls and risk mitigation initiatives.

Strategic, operational and functional risk profiles were finalised for the period under review, and risk mitigation was monitored quarterly by the ERM. In addition, risk assessments were conducted for key projects, including some projects managed on behalf of the Department by its entities.

In the period under review, the ERM performed a maturity assessment of ERM in the Department, using the model and questions provided by National Treasury, which are aligned to the Public Sector Risk Management Framework. The model assesses ERM maturity on five levels. The outcome of the maturity assessment indicated that the Department's ERM maturity level was 4 (rounded off from 4,3), achieved as follows:

- Level 2 – 100%.
- Level 3 – 86%.
- Level 4 – 61%.
- Level 5 – 40%.

The only material improvement identified was the enhancement of the Department's risk appetite and tolerance framework. This is included as a deliverable in the ERM Implementation Plan for the 2022/23 financial year.

The ERM Chairperson briefed the Director-General quarterly, and the Minister annually, on the effectiveness and adequacy of ERM across the Department.

3. FRAUD AND CORRUPTION

The Department has an effective system for fraud risk management, including a policy, framework and strategy, a whistle-blowing policy, and an annual fraud prevention and detection plan. The above were reviewed, updated and approved in the period under review.

The fraud risk profile was finalised at the beginning of the period under review, and served as the basis for the formulation of the annual fraud prevention and detection plan. The fraud prevention and detection plan is driven by the Directorate: ERM and progress is monitored quarterly by the ERM and the Audit Committee.

Using various means of communication, including the publication of articles in the Department's newsletter, the Department actively promotes awareness of fraud and corruption, and the use of the National Anti-Corruption Hotline.

The veracity of allegations of fraud and corruption is thoroughly investigated using internal and/or external resources. The outcome of an investigation guides the Accounting Officer on the steps to be taken to finalise the matter (disciplinary action, recovery of state resources or criminal investigation). If this is warranted, the Department will report a matter to the appropriate law enforcement authority (e.g. the South African Police Service, the Special Investigation Unit or the Office of the Public Protector) for further investigation. This was not necessary in the period under review. The progress of investigations is reported on in the Ethics Committee, and in closed sessions at all ERM meetings.

No new matters were referred to the Department for investigation by the Public Service Commission in the period under review.

4. MINIMISING CONFLICTS OF INTEREST

The Public Service Regulations and the Department of Public Service and Administration (DPSA) directive on financial disclosures requires both SMS and non-SMS employees to disclose their financial interests. For the 2021/22 financial year, 100% of SMS and MMS employees in the Department disclosed their financial interests as required, and corrective action was taken against those employees who did not disclose their financial interests by the due date. The DPSA further issued a directive for Assistant Directors to disclose their financial interests by the end of July 2022.

All employees in governance structures of the Department are required to declare potential conflicts of interest.

5. CODE OF CONDUCT

In a bid to promote a high standard of ethical behaviour of its employees, the Department conducted awareness sessions on the Code of Conduct for the Public Service. The departmental ethics policy and ethics strategy were implemented with the aim of heightening awareness and maintaining the highest level of compliance on ethical matters. The Ethics Committee, which includes delegates from all Programmes in the Department, met quarterly. Ethics ambassadors from the different Programmes were appointed. Ethics Committee members and ethics ambassadors received ethics training.

6. HEALTH, SAFETY AND ENVIRONMENTAL ISSUES

Section 8 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), requires every employer to "provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees". Furthermore, Occupational Health and Safety Assessment Series (OHSAS) 18001:2007, which is the accepted international standard for occupational health and safety (OHS) management systems, requires the employer to identify all possible workplace hazards, assess the risks associated with these hazards, and as far as is reasonably practicable, mitigate or eliminate these risks.

The Department's OHS Strategy focuses on improving the DSI working environment by regularly conducting occupational hygiene surveys, and monitoring the implementation of green working environment standards; reviewing the OHS management system to address OHS challenges within the Department; enhancing compliance with OHS legislation and other requirements; and promoting OHS awareness among employees.

Inspections were held and control measures were put in place to address OHS risks and monitor the implementation of the hazard identification and risk assessment plans. The biological assessment indicated that good hygiene standards were kept, but there were a number of findings on the ventilation assessment. These findings are addressed through short and long-term projects. An ergonomics assessment was conducted and some of the findings are in the process of being addressed. OHS incidents such as injuries and narrowly avoided injuries were analysed and addressed quarterly.

The Department has the OHS Act and policy on display. There are information boards on the evacuation procedure and the management of injury on duty cases in all employee workstations. The Department has a functional Health and Safety Committee, which has been educated about legal obligations in respect of OHS so that they are equipped to execute their responsibilities. In-house training was provided to the Emergency Response Team and the Health and Safety Committee so that they could respond effectively in case of emergency. An emergency evacuation drill was conducted as required.

7. PORTFOLIO COMMITTEE

During the year under review, briefings were presented to the Portfolio Committee on Higher Education, Science and Technology as follows:

Date	Subject	Matters raised by the Portfolio Committee	How the matters were addressed
5 May 2021	Briefing by the Department of Science and Innovation on its 2020-2025 Strategic Plan and 2021/22 Annual Performance Plan	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
7 May 2021	Briefing by the Council for Scientific and Industrial Research on its strategic and annual performance plans	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
7 May 2021	Briefing by the National Research Foundation on its strategic and annual performance plan	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
7 May 2021	Briefing by the National Research Foundation on its strategic and annual performance plans	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
7 May 2021	Briefing by the Human Sciences Research Council on its strategic and annual performance plans	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
19 May 2021 (Select Committee)	Briefing by the DSI on its 2021/22 Annual Performance Plan and Budget Vote	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
1 June 2021	Briefing by the DSI on the STI Decadal Plan	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
1 June 2021	Briefing by the Technology Innovation Agency on its Annual Performance Plan	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
25 Aug. 2021	Briefing by the DSI on its performance reports for the fourth quarter of 2020/21 and the first quarter of 2021/22	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).

Date	Subject	Matters raised by the Portfolio Committee	How the matters were addressed
31 Aug. 2021	Briefing by the DSI and National Research Foundation on progress in the implementation of the New Postgraduate Funding Model and Transformation Framework	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
1 Sept. 2021	Briefing by the DSI and Department of Higher Education and Training on programmes in support of the Economic Reconstruction and Recovery Plan	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
7 Sept. 2021	Briefing by the DSI on its programme to support the District Development Model	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
12 Nov. 2022	Briefing by the DSI on its 2020/21 Annual Report	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
12 Nov. 2021	Briefing by the National Research Foundation on its 2020/21 Annual Report	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
12 Nov. 2021	Briefing by the South African National Space Agency on its 2020/21 Annual Report	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
12 Nov. 2021	Briefing by the Council for Scientific and Industrial Research on its 2020/21 Annual Report	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
19 Nov. 2021	Briefing by the Human Sciences Research Council on its 2021/22 Annual Report	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
24 Nov. 2021	Briefing by the DSI on its progress with gender-responsive planning, budgeting, monitoring and evaluation and auditing to improve inclusivity in STI programmes and initiatives	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
24 Nov. 2021 (Select Committee)	Briefing by the DSI on its 2020/21 Annual Report and Annual Financial Statements	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).

Date	Subject	Matters raised by the Portfolio Committee	How the matters were addressed
26 Nov. 2021	Briefing by the DSI spoke on health innovation in relation to the bioeconomy, drivers, converging technologies, the STI Decadal Plan, capacity development, global health innovation accelerator, and Covid-19 research coordination and vaccine manufacturing, among other things	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
8 Dec. 2021	Briefing by the DSI on the National Integrated Cyberinfrastructure System and the SA Research Infrastructure Roadmap	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
2 Feb. 2022	Briefing by the DSI on progress and developments with the STI Decadal Plan	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
4 March 2022	Briefing by the DSI on its performance reports for the second and third quarters of 2021/22	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
9 March 2022 (Select Committee)	Briefing by the DSI on work done to curb the spread of Covid-19, and the Department's policy priorities for the 2022/23 financial year	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).
25 March 2022	Briefing and update by the DSI on the implementation of the Protection, Promotion, Development and Management of Indigenous Knowledge Act	All questions were answered and no follow-up questions were raised.	All questions were addressed satisfactorily and recorded on the Parliamentary Monitoring Group website (www.pmg.org.za/minutes).

8. SCOPA RESOLUTIONS

There were no Standing Committee on Public Accounts resolutions.

9. PRIOR MODIFICATIONS TO AUDIT REPORTS

There were no prior modifications to the audit reports of the Department.

10. INTERNAL CONTROL UNIT

There is no internal control unit in the Department. All internal control functions are performed by the Internal Audit Activity.

II. INTERNAL AUDIT AND AUDIT COMMITTEE

Key activities and objectives of Internal Audit

The primary role of Internal Audit is that of an in-house assurance function which provides an independent and objective opinion on the adequacy and effectiveness of the Department's control environment. Internal audit work is designed to add value to the organisation's operations, in particular by evaluating and improving the effectiveness of risk management, control and governance processes. In addition to the provision of assurance, Internal Audit carries out non-assurance work, including consulting or advisory services. While Internal Audit contributes to the internal control environment by examining, evaluating and reporting to management on the adequacy and effectiveness of the environment, it should be noted that senior management is responsible for ensuring that adequate internal control systems, both financial and non-financial, are in place and that the best possible value is obtained.

The flexible three-year risk-based rolling internal audit plan (or three-year strategic plan) sets out how Internal Audit will provide an adequate level of assurance while taking account of resource limitations. It describes a programme of internal audit projects that typically lend themselves to an independent review and assessment, and where Internal Audit can provide value to its key stakeholders. More specifically, it is designed to position the Internal Audit Activity (IAA) to address the requirements of the Public Finance Management Act and Treasury Regulations, and ensure compliance with the International Professional Practice Framework (IPPF) of the Institute of Internal Auditors (IIA). The IPPF comprises the IIA Definition of Internal Audit, Code of Ethics for Internal Auditors and Internal Auditing Standards.

In order to demonstrate conformance with the IPPF, a quality assurance and improvement programme was maintained.

Summary of audit work done

The internal audit plan is responsive to changing risks and some audits were therefore added to the plan during the financial year, or deferred or cancelled. The changes were reported to the Audit Committee. The audit plan for 2021/22 comprised 34 audit engagements (a combination of assurance and consulting engagements). Assurance was provided on performance information, IT, procurement, financial disclosures and transfer payments, among other activities. Audit work is closely integrated with the risk management process and its associated risk registers and action plans. A detailed enterprise risk management audit was therefore prioritised. Additionally, as part of the combined assurance plan, certain high risks identified in departmental risk profiles were selected for further assurance activities.

The implementation of projects are key strategic initiatives and were a significant area of audit engagement in the past year.

Consulting work entailed a review of consequence management policies, and the Department's progress with IT security and the implementation of the Protection of Personal Information Act.

Key activities and objectives of the Audit Committee

The Audit Committee is constituted to fulfil the Department's statutory obligations in terms of section 77 of the Public Finance Management Act, 1999, and the Treasury Regulations issued in terms of the Act. The Audit Committee is an oversight body, providing independent oversight over the Department's governance, risk management and control processes. The Committee's mandate and responsibilities are clearly defined in the Audit Committee Charter, in accordance with which four Audit Committee meetings were convened in the year under review.

Attendance of Audit Committee meetings by Audit Committee members

Name	Qualifications	Internal or external	Date appointed	Date contract ended	Number of meetings attended
Len Konar	DCom, CA (SA), CRMA	External	1 Oct. 2016	n/a	4 of 4
Nicolette Middleton	MBA, CIA, BCom Hons (Informatics)	External	1 Mar. 2018	n/a	4 of 4
Irene Tlhase	MA in Economics, BSc (Agribusiness)	External	1 Oct. 2018	30 Sept. 2021	2 of 2
Moshupi Mokgobinyane	CA (SA), MPhil in Accounting Sciences, BCom Hons (Accounting), CTA	External	1 Nov. 2018	31 Oct. 2021	2 of 3
Zanele Monnakgotla	BCom, Master's of Finance, LLB and LLM (tax)	External	1 Oct. 2021	n/a	2 of 2
Trevor Boltman	CIA, CGAP, CCSA, Postgraduate Diploma in Internal Audit	External	1 Oct. 2021	n/a	2 of 2

12. AUDIT COMMITTEE REPORT

We are pleased to present our report for the financial year ended 31 March 2022.

1. AUDIT COMMITTEE RESPONSIBILITY

The Audit Committee has fulfilled its responsibilities in accordance with the provisions of section 38(1)(a)(ii) of the Public Finance Management Act and Treasury Regulation 3.1.13. It has adopted formal terms of reference as its Charter, and has conducted its affairs and discharged its responsibilities in compliance with this Charter.

2. THE EFFECTIVENESS OF INTERNAL AUDIT ACTIVITY

The Acting Chief Audit Executive reports functionally to the Audit Committee to maintain its independence, and the Committee monitors and evaluates the activities of the Internal Audit Activity (IAA). The Internal Audit Charter defines the role, organisational status, objectives, authority, responsibility and scope of activities of the IAA.

The annual audit plan is developed collaboratively in phases, with input from key stakeholders in the Department, and after available departmental risk information, including the risk profile, and other relevant documents/sources have been considered.

The following assurance activities were concluded as per the audit plan:

- Performance against predetermined objectives.
- Project audits.
- Implementation of the Protection of Personal Information Act.
- ICT audits.
- Procurement.
- Enterprise risk management.
- Facilities management/health and safety risk profile.
- Financial disclosures by members of the Senior Management Service.
- Due diligence reviews.
- Transfer payments.

In order to ensure efficient coverage, a combined assurance approach to the system of internal controls is taken, with a focus on further integration and maturation.

3. THE EFFECTIVENESS OF INTERNAL CONTROLS

The review of significant audit findings, which was informed by the risk assessments conducted in the Department, revealed certain weaknesses, which were then raised with the Department. Where weaknesses were identified through an internal audit review, IAA worked with management to agree on appropriate corrective actions and implementation dates for improvements. Although there were few significant findings, the status of corrective actions was monitored on a regular basis until the matter had been resolved. External audit findings are also incorporated into the internal audit plan for follow-up until resolved.

Internal Audit provided the Audit Committee with the assurance that the internal controls were generally effective, with some opportunities for improvement. The Committee is satisfied that an adequate system of internal controls is in place to mitigate risks to an acceptable level.

4. IN-YEAR MANAGEMENT AND MONTHLY/QUARTERLY REPORTING

The Department submits monthly reports on departmental expenditure and quarterly reports on its interim financial statements to the Treasury, as required by the Public Finance Management Act. It also reports quarterly to the Department of Planning, Monitoring and Evaluation on performance against predetermined objectives. During the year under review, the Audit Committee monitored these reports, which were prepared and issued by the Accounting Officer and management.

5. EVALUATION OF FINANCIAL STATEMENTS

The Audit Committee –

- reviewed and discussed, with the Auditor-General South Africa (AGSA) and the Accounting Officer, the audited annual financial statements to be included in the annual report;
- reviewed the Department's compliance with legal and regulatory provisions;
- reviewed significant adjustments resulting from the audit;
- reviewed the AGSA's management letter and management's response to it;
- reviewed information on predetermined objectives to be included in the annual report.

Overall, the Audit Committee is satisfied with the submission and quality of both the interim and annual financial statements prepared by the Department.

6. ENTERPRISE RISK MANAGEMENT

Enterprise risk management is a structured process that focuses on the identification, assessment, management and monitoring of risk. A fully functional Enterprise Risk Management Committee supports the Executive Authority and Accounting Officer by providing oversight, reviewing information presented by management, and reporting on the adequacy and effectiveness of the Department's risk management system. The Committee monitored significant risks and is satisfied that they are receiving the required attention. Comprehensive strategies for enterprise risk management and fraud risk management were developed and implemented. The fraud risk management strategy includes a fraud prevention and detection plan. For the purposes of coordination and fostering relationships, the Chairperson of the Audit Committee and the Chief Audit Executive are standing invitees to the Enterprise Risk Management Committee, and the Chairperson of the Enterprise Risk Management Committee and the Chief Risk Officer are standing invitees to the Audit Committee.

7. ANNUAL PERFORMANCE REVIEW

The Audit Committee has considered the performance information reports submitted to the AGSA for review.

8. AUDITOR-GENERAL'S REPORT

The Audit Committee reviewed the audit outcomes in the AGSA management report and is satisfied that the matters are being adequately addressed. However, the following areas of concern require management intervention:

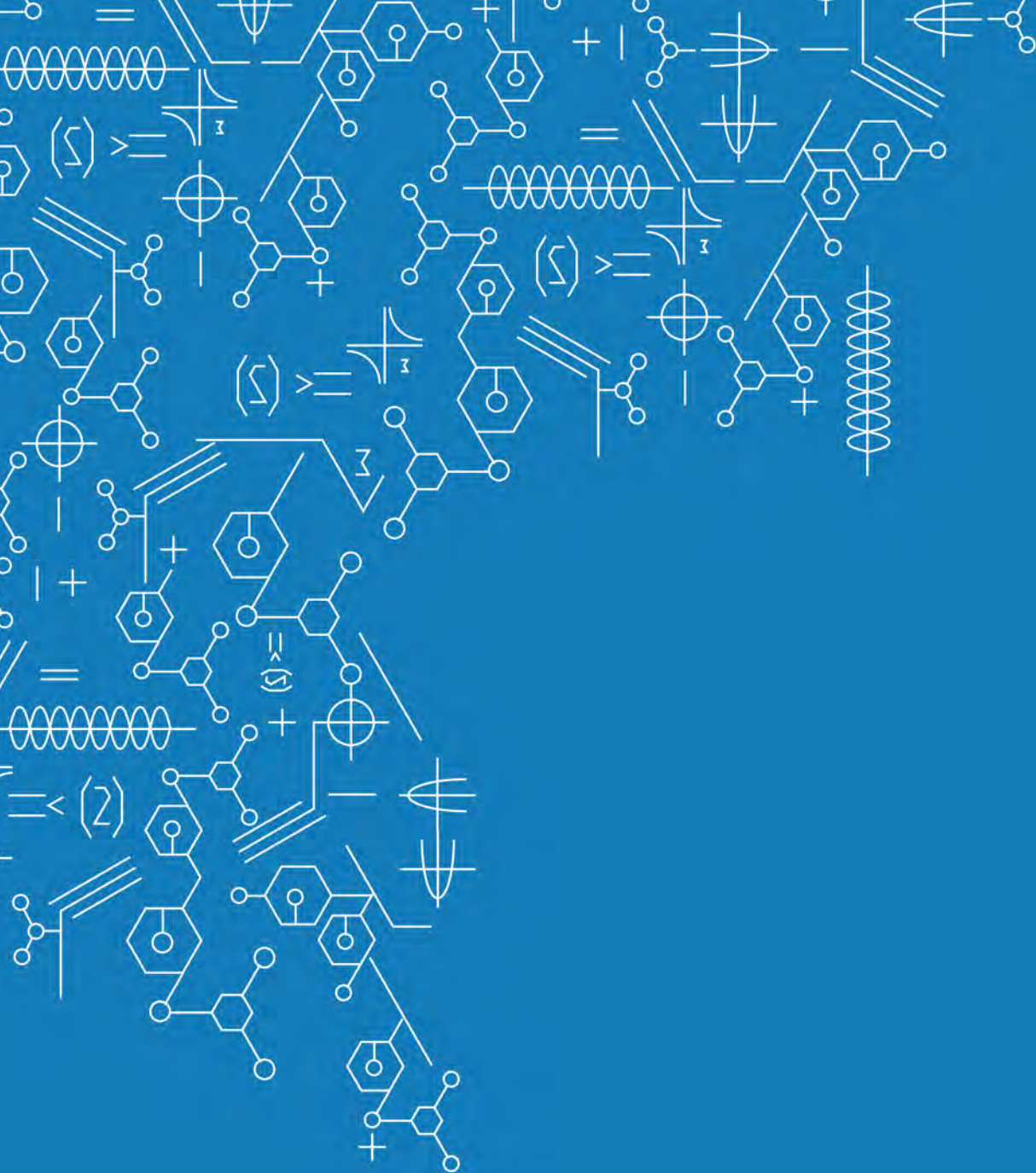
- **Information technology** – Inadequate design and/or implementation of controls in the areas of security management and user access management.
- **Performance against predetermined objectives** – Management did not adequately review the alignment of information in the annual performance plan with the annual performance report prior to reporting.

The Audit Committee concurs with and accepts the conclusions of the Auditor-General on the annual financial statements, and is of the opinion that the audited annual financial statements should be accepted and read together with the report of the AGSA.

Ms Z Monnakgotla

Chairperson of the Audit Committee

Department of Science and Innovation
July 2022



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HUMAN RESOURCE MANAGEMENT

I. INTRODUCTION

The reporting information contained in this section of the Annual Report has been prescribed by the Department of Public Service and Administration for all departments within the Public Service.

2. OVERVIEW OF HUMAN RESOURCES

As at 31 March 2022, the departmental post establishment was at 495, with 371 positions filled and 124 vacant, translating to an 25,05% vacancy rate. This was owing the impact of the National Treasury decision to reduce the baseline of the allocation for compensation of employees, which resulted in all vacant positions being declared unfunded.

A total of 19 employees left the Department and four employees were recruited from within the Public Service, making the departmental turnover rate 25,05%. Resignation accounted for most (40,11%) terminations, with transfers to other departments accounting for 21,05% and death for 5,26%, Retirement accounted for 21,05%, misconduct 5.26% and contract expiry 5.26%.

The Department continued to comply with the Performance Management and Development System. All 95 Senior Management Service (SMS) members submitted their performance agreements by the due date and all performance rewards for both SMS and non-SMS were processed by 31 December 2021.

As part of the Department's ongoing commitment to health promotion programmes, it has a designated SMS member, a dedicated directorate and an adequate budget. All the committees required in this regard by the Public Service Regulations are functioning.

As at 31 March 2022, only 81% of the approved departmental organisational structure was funded. The process of reviewing the organisational structure was suspended during the transition from the fifth to the sixth administration. With 19% of the approved structure unfunded, staff in funded positions carry out the functions of unfunded positions, and many employees are overburdened and overstretched.

Following the finalisation of the decadal plan and the review of the strategic plan 2020-2025, the Department is currently in the process of reviewing its organisational structure to position the Department to achieve its strategic objectives and also in order to ensure adherence to the Public Service Regulations, 2016, Chapter 3, part 1, 25 (2), the DPSA directive on organisational structures and other relevant prescripts.

As part of the Departments ongoing commitment to health promotion programmes, it has formally designated an SMS member, established a dedicated directorate, allocated sufficient budget, established and maintained fully functional statutory committees which are established in line with the Public Service Regulations, 2016. There is sufficient utilisation of the health and wellness programme services offered by employees to address personal and work-related psycho-social challenges.

3. HUMAN RESOURCES OVERSIGHT STATISTICS

3.1 PERSONNEL-RELATED EXPENDITURE

Table 3.1.1: Personnel expenditure by Programme in the period 1 April 2021 to 31 March 2022

Programme	Total expenditure (R'000)	Personnel expenditure (R'000)	Training expenditure (R'000)	Professional and special services expenditure (R'000)	Personnel expenditure as % of total expenditure	Average personnel cost per employee (R'000)
Administration	304,454	154,952	4,277	5,266	50.90%	770
Technology Innovation	1,719,613	44,659	0	0	2.58%	858
International Cooperation and Resources	131,808	48,345	0	211	36.68%	912
Research Development and Support	4,991,443	42,562	0	0	0.85%	886
Socio-economic Innovation Partnerships	1,814,725	42,233	0	0	2.33%	959
Total	8,962,043	332,751	4,277	5,266	3.71%	855

Table 3.1.2: Personnel costs by salary band in the period 1 April 2021 to 31 March 2022

Salary band	Personnel expenditure (R'000)	% of total personnel cost	Number of employees	Average personnel cost per employee (R'000)
Lower skilled (Levels 1-2)	0.00	0%	0	0
Skilled (Levels 3-5)	3147	1	13	242.07
Highly skilled production (Levels 6-8)	39 683	12%	97	409,10
Highly skilled supervision (Levels 9-12)	148 403	44%	171	867.85
Senior and top management (Levels 13-16)	141 518	43%	98	1 444.06
Total	332 751	100%	379	877.97

Table 3.1.3: Salaries, overtime, home owner's allowance and medical aid by Programme in the period 1 April 2021 to 31 March 2022

Programme	Salaries		Overtime		Home owner's allowance (HOA)		Medical aid	
	Amount (R'000)	Salaries as % of personnel costs	Amount (R'000)	Overtime as % of personnel costs	Amount (R'000)	HOA as % of personnel costs	Amount (R'000)	Medical aid as % of personnel costs
Administration	154,952	46.45%	297	0.19%	2,085	1.35%	3,850	2.48%
Technology Innovation	44,659	13.39%	0	0.00%	614	1.37%	705	1.58%
International Cooperation and Resources	48,345	14.75%	0	0.00%	623	1.08%	1,125	2.33%
Research Development and Support	42,562	12.78%	0	0.18%	772	1.81%	736	1.73%
Socio-economic Innovation Partnerships	42,233	12.66%	0	0.00%	372	0.88%	811	1.92%
Total	332,751	19.48%	297	0.19%	4,466	3.41%	7,227	2.17%

Table 3.1.4: Salaries, overtime, home owner's allowance and medical aid by salary band in the period 1 April 2021 to 31 March 2022

Salary band	Salaries		Overtime		Home owner's allowance (HOA)		Medical aid	
	Amount (R'000)	Salaries as % of personnel costs	Amount (R'000)	Overtime as % of personnel costs	Amount (R'000)	HOA as % of personnel costs	Amount (R'000)	Medical aid as % of personnel costs
Lower skilled (Levels 1-2)	0	0	0	0	0	0	0	0
Skilled (Levels 3-5)	3 147	1	7	0,02	71	0,21	179	0,53
Highly skilled production (Levels 6-8)	39 683	12	187	0,56	1629	0,48	2998	0,90
Highly skilled supervision (Levels 9-12)	148 403	44	103	0,30	1415	0,42	2709	0,81
Senior and top management (Levels 13-16)	141 518	43	0	0,00	1351	0,40	1341	0,40
Total	332 751	100	297	1,07	4466	1,51	7227	2,64

3.2 EMPLOYMENT AND VACANCIES

Table 3.2.1: Employment and vacancies by Programme as at 31 March 2022

Programme	Number of posts on approved establishment	Number of posts filled	Vacancy rate	Number of employees additional to the establishment
Administration	247	186	24.70%	3
Technology Innovation	62	47	24.19%	0
International Cooperation and Resources	69	48	30.43%	3
Research Development and Support	55	46	16.36%	0
Socio-economic Innovation Partnerships	62	44	29.03%	1
Total	495	371	25.05%	7

Table 3.2.2: Employment and vacancies by salary band as at 31 March 2022

Salary band	Number of posts on approved establishment	Number of posts filled	Vacancy rate	Number of employees additional to the establishment
Lower skilled (Levels 1-2)	1	1	0.00%	0
Skilled (Levels 3-5)	16	12	25.00%	0
Highly skilled production (Levels 6-8)	126	96	23.81%	3
Highly skilled supervision (Levels 9-12)	226	166	26.55%	4
Senior and top management (Levels 13-16)	126	96	23.81%	0
Total	495	371	25.05%	7

Table 3.2.3: Employment and vacancies by critical occupation as at 31 March 2022

Programme	Number of posts on approved establishment	Number of posts filled	Vacancy rate	Number of employees additional to the establishment
None	495	371	0	0
Total	495	371	0	0

3.3 FILLING OF SENIOR MANAGEMENT SERVICE POSTS

Table 3.3.1: SMS post information as at 31 March 2022

SMS level	Total number of funded SMS posts	Total number of SMS posts filled	% of SMS posts filled	Total number of SMS posts vacant	% of SMS posts vacant
Director-General	1	1	100.00%	0	0.00%
Salary Level 16	0	0	0.00%	0	0.00%
Salary Level 15	9	7	77.78%	2	22.22%
Salary Level 14	28	17	60.71%	11	39.29%
Salary Level 13	88	72	81.82%	16	18.18%
Total	126	97	76.98%	29	23.02%

Table 3.3.2: SMS post information as at 30 September 2021

SMS level	Total number of funded SMS posts	Total number of SMS posts filled	% of SMS posts filled	Total number of SMS posts vacant	% of SMS posts vacant
Director-General	1	1	100%	0	0.00%
Salary Level 16	0	0	0.00%	0	00.00%
Salary Level 15	9	6	66.67%	3	33.33%
Salary Level 14	28	16	57.14%	12	42.86%
Salary Level 13	88	74	84.08%	14	15.91%
Total	126	97	76.98%	29	23.02%

Table 3.3.3: Advertising and filling of SMS posts in the period 1 April 2021 to 31 March 2022

SMS level	Total number of funded SMS posts	Total number of SMS posts filled	% of SMS posts filled	Total number of SMS posts vacant	% of SMS posts vacant
Director-General	1	1	100.00%	0	0.00%
Salary Level 16	0	0	0.00%	0	0.00%
Salary Level 15	9	7	77.78%	2	55.56%
Salary Level 14	28	17	60.71%	11	39.29%
Salary Level 13	88	72	81.82%	16	18.18%
Total	126	97	76.98%	29	23.02%

Table 3.3.4: Reasons for not having complied with time frames for the filling of funded vacant SMS posts – advertised within 6 months and filled within 12 months after becoming vacant – in the period 1 April 2021 to 31 March 2022

Reasons for vacancies not being advertised within six months

Positions which were vacant on 1 November 2017 were declared unfunded as a result of the reduction of the baseline allocation for the compensation of employees by National Treasury in November 2016. Positions are reprioritised upon termination of services by employees.

Reasons for vacancies not being filled within six months

Transitional measures from the 5th to the 6th administration resulted in the moratorium on the filling of positions at Deputy Director General together with the suspension in the filling of Programme I positions as a result of the reconfiguration of government. The Department also experienced challenges as a result of delays in obtaining the outcomes of pre-employment screening by the State Security Agency.

Table 3.3.5: Disciplinary steps taken for not complying with the prescribed time frames for filling SMS posts in the period 1 April 2021 to 31 March 2022

Vacancies not advertised within six months

None

Vacancies not filled within six months

None

3.4 JOB EVALUATION

Table 3.4.1: Job evaluation by salary band in the period 1 April 2021 to 31 March 2022

Salary band	Number of posts on approved establishment	Number of jobs evaluated	% of posts evaluated by salary band	Posts upgraded		Posts downgraded	
				Number	% of posts evaluated	Number	% of posts evaluated
Lower skilled (Levels 1-2)	1	0	0	0	0	0	0
Skilled (Levels 3-5)	16	0	0	0	0	0	0
Highly skilled production (Levels 6-8)	126	4	3.17	0	0	0	0
Highly skilled supervision (Levels 9-12)	226	18	7.96	0	0	0	0
Senior Management Service Band A	89	3	3.37	0	0	0	0
Senior Management Service Band B	27	12	44.44	0	0	0	0
Senior Management Service Band C	9	0	0	0	0	0	0
Senior Management Service Band D	1	0	0	0	0	0	0
Total	495	37	7.47	0	0	0	0

Table 3.4.2: Profile of employees whose positions were upgraded due to their posts being upgraded in the period 1 April 2021 to 31 March 2022

Gender	African	Asian	Coloured	White	Total
Female	0	0	0	0	0
Male	0	0	0	0	0
Total	0	0	0	0	0

Table 3.4.3: Employees with salary levels are higher than those determined by job evaluation by occupation in the period 1 April 2021 to 31 March 2022

Occupation	Number of employees	Job evaluation level	Remuneration level	Reason for deviation
Deputy Director-General	0	0	0	0
Chief Director	0	0	0	0
Director	0	0	0	0
Deputy Director	42	11	12	Personal notch
Assistant Director	19	9	10	Personal notch
	0	0	0	
Total	61		0	Personal notch
Total number of employees whose salaries exceeded the level determined by job evaluation				619
Percentage of total employed				16.44%

Table 3.4.4: Profile of employees with salary levels higher than those determined by job evaluation in the period 1 April 2021 to 31 March 2022

Category	African	Asian	Coloured	White	Total
Female	27	1	2	3	33
Male	24	0	1	3	28
Employees with a disability	0	0	0	0	0
Total	51	1	3	6	61

3.5 EMPLOYMENT CHANGES

Table 3.5.1: Annual turnover rates by salary band in the period 1 April 2021 to 31 March 2022

Salary band	Number of employees as at 1 April 2021	Appointments and transfers into the Department	Terminations and transfers out of the Department	Turnover rate
Lower skilled (Levels 1-2)	0	1	1	0.00%
Skilled (Levels 3-5)	13	2	2	15.38%
Highly skilled production (Levels 6-8)	97	0	1	1.03%
Highly skilled supervision (Levels 9-12)	171	5	8	4.68%
Senior Management Service Band A -13	74	3	2	2.70%
Senior Management Service Band B -14	17	4	4	23.53%
Senior Management Service Band C -15	6	1	1	16.67%
Senior Management Service Band D-16	1	0	0	0.00%
Total	379	16	19	8.44%

Table 3.5.2: Annual turnover rates by critical occupation in the period 1 April 2021 to 31 March 2022

Critical occupation	Number of employees at beginning of period April 2019	Appointments and transfers into the department	Terminations and transfers out of the department	Turnover rate
None	379	16	19	0
Total	379	16	19	0

LIST OF TERMINATIONS

Table 3.5.3: Reasons why staff left the Department in the period 1 April 2021 to 31 March 2022

Termination type	Number	% of total resignations/ terminations
Death	1	5.26%
Resignation	8	40.11%
Expiry of contract	1	5.26%
Dismissal – operational changes	0	0.00%
Dismissal – misconduct	1	5.26%
Dismissal – inefficiency	0	0.00%
Discharged due to ill-health	0	0.00%
Retirement	4	21.05%
Transfer to other Public Service departments	4	21.05%
Other	0	0.00%
Total	19	100.00%
Total number of employees who left as a percentage of total employment		8.44%

Table 3.5.4: Promotions by critical occupation in the period 1 April 2021 to 31 March 2022

Occupation	Employees 1 April 2019	Promotions to another salary level	Salary level promotions as a % of employees by occupation	Progressions to another notch within a salary level	Notch progression as a % of employees by occupation
None	0	0	0	0	0
Total	0	0	0	0	0

Table 3.5.5: Promotions by salary band in the period 1 April 2021 to 31 March 2022

Salary band	Employees at 1 April 2021	Promotions to a higher salary level	Salary bands promotions as % of employees by salary level	Progressions to a higher notch within a salary level	Notch progression as % of employees by salary band
Lower skilled (Levels 1-2)	0	0	0.00%	0	0
Skilled (Levels 3-5)	13	0	0.00%	8	61,54%
Highly skilled production (Levels 6-8)	97	0	0.00%	100	103%
Highly skilled supervision (Levels 9-12)	171	3	1.75%	163	95,32%
Senior Management (Levels 13-16)	98	5	5.10 %	92	93,88%
Total	379	8	2.11%	363	95,78%

3.6 EMPLOYMENT EQUITY

Table 3.6.1: Total number of employees (including employees with disabilities) in each of the following occupational categories as at 31 March 2022

Occupational category	Male				Female				Total
	African	Coloured	Asian	White	African	Coloured	Asian	White	
Legislators, senior officials and managers 13-15	39	3	4	5	32	2	5	8	98
Professionals 9-12	61	2	1	5	86	3	2	6	166
Technicians and associate professionals 6-8	22	2	0	0	63	4	0	3	94
Clerks 3-5	5	0	0	0	7	1	0	0	13
Service and sales workers	0	0	0	0	0	0	0	0	0
Skilled agriculture and fishery workers	0	0	0	0	0	0	0	0	0
Craft and related trades workers	0	0	0	0	0	0	0	0	0
Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
Elementary occupations	0	0	0	0	0	0	0	0	0
Total	127	7	5	10	188	10	7	17	371
Employees with disabilities	2	0	0	1	7	1	0	2	13

Table 3.6.2: Total number of employees (including employees with disabilities) in each of the following occupational bands as at 31 March 2022

Occupational band	Male				Female				Total
	African	Coloured	Asian	White	African	Coloured	Asian	White	
Top management 15-16	3	0	1	2	2	0	0	0	8
Senior management 13-14	36	3	3	3	30	2	5	8	90
Professionally qualified and experienced specialists and middle management 9-12	61	2	1	5	86	3	2	6	166
Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents 6-8	22	2	0	0	63	4	0	3	94
Semi-skilled and discretionary decision making 3-5	5	0	0	0	7	1	0	0	13
Unskilled and defined decision making	0	0	0	0	0	0	0	0	0
Total	127	7	5	10	188	10	7	18	371
Employees with disabilities	2	0	0	1	7	1	0	2	13

Table 3.6.3: Recruitment in the period 1 April 2021 to 31 March 2022

Occupational band	Male				Female				Total
	African	Coloured	Asian	White	African	Coloured	Asian	White	
Top management 15-16	1				1				2
Senior management 13-14	3				3			1	7
Professionally qualified and experienced specialists and middle management 9-12	1				3			1	5
Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents 6-8									
Semi-skilled and discretionary decision making 3-5	1				1				2
Unskilled and defined decision making									
Total	6				8			2	16
Employees with disabilities									

Table 3.6.4: Promotions in the period 1 April 2021 to 31 March 2022

Occupational band	Male				Female				Total
	African	Coloured	Asian	White	African	Coloured	Asian	White	
Top management 15-16									
Senior management 13-14	1				3			1	5
Professionally qualified and experienced specialists and middle management 9-12					2			1	3
Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents 6-8									
Semi-skilled and discretionary decision making 3-5									
Unskilled and defined decision making									
Total	1				5			2	8
Employees with disabilities									

Table 3.6.5: Terminations in the period 1 April 2021 to 31 March 2022

Occupational band	Male				Female				Total
	African	Coloured	Asian	White	African	Coloured	Asian	White	
Top management 15-16					1				1
Senior management 13-14	2				4				6
Professionally qualified and experienced specialists and middle management 9-12	4			1	3				9
Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents 6-8					1				2
Semi-skilled and discretionary decision making 3-5	1								1
Unskilled and defined decision making					2				2
Total	7			1	13				19
Employees with disabilities									

Table 3.6.6: Disciplinary action in the period 1 April 2021 to 31 March 2022

Disciplinary action	Male				Female				Total
	African	Coloured	Asian	White	African	Coloured	Asian	White	
Correctional counselling	0	0	0	0	0	0	0	0	0
Verbal warning	0	0	0	0	0	0	0	0	0
Written warning	2	0	0	0	1	0	0	0	3
Final written warning	1	0	0	0	0	0	0	0	1
Suspension without pay	0	0	0	0	0	0	0	0	0
Total	3	0	0	0	1	0	0	0	4

Table 3.6.7: Skills development in the period 1 April 2021 to 31 March 2022

Occupational category	Male				Female				Total
	African	Coloured	Asian	White	African	Coloured	Asian	White	
Legislators, senior officials and managers 13-15	20	1	2	2	25	2	2	6	60
Professionals 9-12	11	1	0	2	35	1	1	0	51
Technicians and associate professionals 6-8	9	1	0	0	10	3	0	1	24
Clerks 3-5	1	0	0	0	0	0	0	0	1
Service and sales workers	0	0	0	0	0	0	0	0	0
Skilled agriculture and fishery workers	0	0	0	0	0	0	0	0	0
Craft and related trades workers	0	0	0	0	0	0	0	0	0
Plant and machine operators and assemblers	0	0	0	0	0	0	0	0	0
Elementary occupations	0	0	0	0	0	0	0	0	0
Total	41	3	2	4	70	6	3	7	136
Employees with disabilities	0	0	0	0	1	0	0	0	1

3.7 SIGNING OF PERFORMANCE AGREEMENTS BY SMS MEMBERS

Table 3.7.1: Signing of performance agreements by SMS members as at 31 May 2021

SMS level	Total number of funded SMS posts	Total number of SMS members	Total number of signed performance agreements	Signed performance agreements as % of total number of SMS members*
Director-General	1	1	1	100
Salary Level 16	0	0	0	0
Salary Level 15	9	4	4	100
Salary Level 14	27	18	18	100
Salary Level 13	88	71	71	100
Total	125	95	95	100

Table 3.7.2: Reasons for not having concluded performance agreements for all SMS members as at 31 May 2021

n/a

Table 3.7.3: Disciplinary steps taken against SMS members for not having concluded performance agreements as at 31 May 2021

n/a

3.8 PERFORMANCE REWARDS

Table 3.8.1: Performance rewards by race, gender and disability in the period 1 April 2021 to 31 March 2022

Race and gender	Beneficiary profile			Cost		Total cost as % of total personnel expenditure
	Number of beneficiaries	Number of employees	% of total within group	Cost (R'000)	Average cost per employee	
African						
Male	47	122	38,52%	R620 636,17	R13 205,02	0,17%
Female	90	186	48,39%	R941 318,59	R10 459,10	0,26%
White						
Male	1	12	8,33%	R7 332,57	R7 332,57	0,02%
Female	4	17	35,29%	R85 898,43	R14 316,41	0,2%
Coloured						
Male	0	5	0%	R0	R0	0%
Female	4	10	40,00%	R41 876,16	R10 469,04	0,01%
Asian						
Male	3	5	60,00%	R32 577,54	R10 859,18	0,01%
Female	6	8	75,00%	R82 666,26	R13 777,71	0,02%
Total	156	365	42,74%	R1 812 305,72	R11 617,34	0,50%

Table 3.8.2: Performance rewards by salary band for personnel below Senior Management Service level in the period 1 April 2021 to 31 March 2022

Salary band	Beneficiary profile			Cost		Total cost as % of total personnel expenditure
	Number of beneficiaries	Number of employees	% of total within salary bands	Total cost (R'000)	Average cost per employee	
Lower skilled (Levels 1-2)	0	0	0%	R0	0	0%
Skilled (Levels 3-5)	2	8	25%	R14 213,76	R7 106,88	0,004%
Highly skilled production (Levels 6-8)	38	102	37%	R563 907,52	R14 839,67	0,16%
Highly skilled supervision (Levels 9-12)	86	162	53%	R777 918,21	R9 045,56	0,21%
Total	126	272	46%	R1 356 039,49	R10 762,22	0,37%

Table 3.8.3: Performance rewards by critical occupation in the period 1 April 2021 to 31 March 2022

Critical occupation	Beneficiary profile			Cost	
	Number of beneficiaries	Number of employees	% of total within occupation	Total cost (R'000)	Average cost per employee
None	0	0	0	0	0
Total	0	0	0	0	0

Table 3.8.4: Performance-related rewards (cash bonus), by salary band for Senior Management Service in the period 1 April 2021 to 31 March 2022

Salary band	Beneficiary profile			Cost		Total cost as % of total personnel expenditure
	Number of beneficiaries	Number of employees	% of total within salary band	Total cost (R'000)	Average cost per employee	
Band A	0	1	0%	0	0	0%
Band B	0	4	0%	0	0	0%
Band C	4	14	28,57%	R53 544,45	R13 386,11	0,01%
Band D	26	74	35,14%	R402 721,78	R15 489,30	0,11%
Total	30	93	32,26%	R456 266,23	R15 208,87	0,13%

Table 3.9.1: Foreign workers by salary band in the period 1 April 2021 to 31 March 2022

Salary band	1 April 2018		31 March 2019		Change	
	Number	% of total	Number	% of total	Number	% change
Lower skilled	0	0	0	0	0	0
Highly skilled production (Levels 6-8)	0	0	0	0	0	0
Highly skilled supervision (Levels 9-12)	0	0	0	0	0	0
Periodic Remuneration	0	0	0	0	0	0
Total	0	0	0	0	0	0

Table 3.9.2: Foreign workers by major occupation in the period 1 April 2021 to 31 March 2022

Major occupation	1 April 2017		31 March 2018		Change	
	Number	% of total	Number	% of total	Number	% change
None	0	0	0	0	0	0
Total	0	0	0	0	0	0

3.10 LEAVE UTILISATION

Table 3.10.1: Sick leave in the period 1 January 2021 to 31 December 2021

Salary band	Total days taken	% days with medical certification	Number of employees using sick leave	% of total employees using sick leave	Average days per employee	Estimated cost (R'000)
Lower skilled (Levels 1-2)	0	0,00%	0	0,00%	0	0
Skilled (Levels 3-5)	24	2,89%	5	36%	5	21
Highly skilled production (Levels 6-8)	282	33,94%	45	38%	6	426
Highly skilled supervision (Levels 9-12)	375	45,13%	71	34%	5	1192
Top and senior management (Levels 13-16)	150	18,05%	29	27%	5	692
Total	831	25,00%	150	34%	6	2331

Table 3.10.2: Disability leave (temporary and permanent) in the period 1 January 2021 to 31 December 2021

Salary band	Total days taken	% days with medical certification	Number of employees using sick leave	% of total employees using sick leave	Average days per employee	Estimated cost (R'000)
Lower skilled (Levels 1-2)	0	0%	0	0,00%	0	0
Skilled (Levels 3-5)	0	0%	0	0,00%	0	0
Highly skilled production (Levels 6-8)	100	100%	2	2,13%	50	175
Highly skilled supervision (Levels 9-12)	36	100%	2	1,19%	18	105
Top and senior management (Levels 13-16)	28	100%	2	2,00%	14	116
Total	164	100%	6	1,60%	82	396

Table 3.10.3: Annual leave in the period 1 January 2021 to 31 December 2021

Salary band	Total days taken	Number of employees using annual leave	Average per employee
Lower skilled (Levels 1-2)	0	0	0
Skilled (Levels 3-5)	138	7	20
Highly skilled production (Levels 6-8)	2537	113	22
Highly skilled supervision (Levels 9-12)	4290	117	37
Senior management (Levels 13-16)	2470	100	25
Total	9435	337	28

Table 3.10.4: Capped leave in the period 1 January 2021 to 31 December 2021

Salary band	Total days of capped leave taken	Number of employees using capped leave	Average number of days taken per employee	Average capped leave per employee as at 31 March 2021
Lower skilled (Levels 1-2)	0	0	0.00	0
Skilled (Levels 3-5)	0	0	0	0
Highly skilled production (Levels 6-8)	0	0	0.00	0
Highly skilled supervision (Levels 9-12)	0	0	0.00	0
Senior management (Levels 13-16)	0	0	0.00	0
Total	0	0	0.00	0

Table 3.10.5: Leave payouts in the period 1 January 2021 to 31 December 2021

Reason	Total amount (R'000)	Number of employees	Average per employee (R'000)
Leave pay-outs in 2021 due to non-utilisation of leave for the previous cycle	87	1	87
Capped leave payouts on termination of service in 2021	267	3	89
Current leave payouts on termination of service in 2021	599	18	33
Total	953	22	122

3.11 HIV/AIDS AND HEALTH PROMOTION PROGRAMMES

Table 3.11.1: Steps taken to reduce the risk of occupational exposure

Units/categories of employees identified to be at high risk of contracting HIV and related diseases (if any)	Key steps taken to reduce the risk
There are no employees identified with occupational risk of exposure to HIV due to the nature of their.	None

Table 3.11.2: Details of health promotion and HIV/Aids programmes

Question	Yes	No	Details, if yes
1. Has the Department designated a member of the SMS to implement the provisions contained in Part VI E of Chapter 1 of the Public Service Regulations, 2001? If so, provide her/his name and position.	X		Ms Siphwe Mthombeni Director: Special Programmes
2. Does the Department have a dedicated unit or has it designated specific staff members to promote the health and well-being of its employees? If so, indicate the number of employees who are involved in this task and the annual budget that is available for this purpose.	X		The Directorate: Special Programmes has five positions (one director, one deputy director, two assistant directors and administrator). The Directorate had human resources constraints as only the Director and Administrator positions were filled. The ASD: Special Programmes was appointed in October 2021 as a Temporary Service. The ASD: OHS was appointed in November 2021. The DD: Special Programmes was vacant. The budget allocated for this task amounted to R 716, 677, which was allocated for the promotion of employees' health and wellness, including HIV, Aids and TB programme.

Question	Yes	No	Details, if yes
3. Has the Department introduced an employee assistance or health promotion programme for its employees? If so, indicate the key elements/ services of this programme.	X		The Department's Employee Assistance Programme services are outsourced. The services offered include assistance with personal, family, work, financial, health and legal challenges. Key elements of the programme include counselling, health risk assessments, HIV counselling and testing, TB screenings, the distribution of male and female condoms, and education, awareness. Sports activities have been put on hold due to Covid-19 risk.
4. Has the Department established one or more committees as contemplated in Part VI E.5 (e) of Chapter I of the Public Service Regulations, 2001? If so, please provide the names of the members of the committee and the stakeholder(s) that they represent.	X		<ol style="list-style-type: none"> 1. Ms Sipiwe Mthombeni 2. Ms Mpho Ramakhale 3. Ms Ellen Molo 4. Ms Truelove Mnguni 5. Ms Nombulelo Dlalisa 6. Ms Pertunia Mphato 7. Ms Ncumisa Runeyi 8. Ms Caroline Mohlamonyane 9. Mr Phumelele Yabo 10. Ms Tumisang Sebitloane 11. Ms Vivienne Gondwe 12. Mr Benny Nhlapo 13. Ms Hlamalani Khoza <p>The committee represents all employees in the Department (both SMS and non-SMS members).</p>
5. Has the Department reviewed its employment policies and practices to ensure that they do not unfairly discriminate against employees on the basis of their HIV status? If so, list the employment policies/practices so reviewed.	X		<p>The following policies were in the process of being reviewed, however they have not been finalised:</p> <ol style="list-style-type: none"> 1. DSI Policy on HIV/Aids and TB in the Workplace. 2. DSI Policy on Reasonable Accommodation for People with Disabilities. 3. The Health and Wellness Programme Policy. 4. The Health and Productivity Policy. <p>The DSI Policy on Occupational Health and Safety was reviewed and approved.</p>
6. Has the Department introduced measures to protect HIV-positive employees or those perceived to be HIV-positive from discrimination? If so, list the key elements of these measures.	X		The Department has adopted the HIV, Aids and TB policy to communicate the department's commitment to implement an HIV/Aids workplace programme. The policy has been shared with employees. Awareness and education was implemented at a candle light ceremony on World Aids Day. The Department also conducted HIV testing.
7. Does the Department encourage its employees to undergo voluntary HIV counselling and testing? If so, list the results that this has achieved	X		The Department conducts quarterly HIV counselling and testing (HCT) drives. Due to the Covid-19 pandemic and employees working remotely, there was low participation. The health screenings were conducted in 3 quarters. One drive was cancelled due to increased Covid-19 cases in the country. An average of 10.1% of employees were tested for HIV over 3 quarters.

Question	Yes	No	Details, if yes
8. Has the Department developed measures/ indicators to monitor and evaluate the impact of its health promotion programme? If so, list these measures/indicators.	X		The Department has adopted measures and indicators as provided by the Department of Public Service and Administration (DPSA) Employee Health and Wellness Strategic Framework for the Public Service. The quarterly progress reports with remedial actions were submitted to the DPSA. The department's Special Programmes Directorate monitors the implementation of services by ICAS and employees provide an evaluation of the services. The department also monitors outcome of the following indicators: <ul style="list-style-type: none"> i. Percentage of employees participating on health screenings. ii. Percentage of employees participating on the HIV Counselling and Testing. iii. Number of SMS health screened. iv. Number of wellness intervention implemented. v. Access to employee assistance programme services.

3.12 LABOUR RELATIONS

Table 3.12.1: Collective agreements in the period | April 2021 to 31 March 2022

Total number of collective agreements	1
---------------------------------------	---

Table 3.12.2: Misconduct and disciplinary hearings finalised in the period | April 2021 to 31 March 2022

Outcomes of disciplinary hearings	Number	% of total
Correctional counselling	0	0%
Verbal warning	0	0%
Written warning	3	75%
Final written warning	1	25%
Suspension without pay	0	0%
Demotion	0	0%
Dismissal	0	0%
Total number of disciplinary hearings finalised	4	100%

Table 3.12.3: Types of misconduct addressed at disciplinary hearings in the period | April 2021 to 31 March 2022

Types of misconduct	Number	% of total
Dishonesty on overtime worked.	0	0%
Failure to disclose registrable interests	0	0%
Improper conduct (Incompatibility)	1	100%
Total	1	100%

Table 3.12.4: Grievances lodged in the period | April 2021 to 31 March 2022

Grievances	Number	% of total
Number of grievances resolved	7	54%
Number of grievances not resolved	6	46%
Total number of grievances lodged	13	0%

Table 3.12.5: Disputes logged with councils in the period 1 April 2021 to 31 March 2022

Dispute	Number	% of total
Number of disputes upheld	0	0%
Number of disputes dismissed	0	0%
Total number of disputes lodged	0	0%

Table 3.12.6: Strike actions in the period 1 April 2021 to 31 March 2022

Total number of persons working days lost	0
Total cost of working days lost	0
Amount recovered as a result of no work no pay (R'000)	0

Table 3.12.7: Precautionary suspensions in the period 1 April 2021 to 31 March 2022

Total number of persons working days lost	519
Total cost of working days lost	1 002 334,83
Amount recovered as a result of no work no pay (R'000)	N/A

3.13 SKILLS DEVELOPMENT

Table 3.13.1: Training needs identified in the period 1 April 2021 to 31 March 2022

Occupational category	Gender	Number of employees as at 1 April 2021	Training identified at start of the reporting period			
			Learnerships	Skills programmes and other short courses	Other forms of training	Total
Legislators, senior officials and managers	Female	49	0	4	5	9
	Male	49	0	4	3	7
Professionals	Female	67	0	6	12	18
	Male	61	0	6	12	18
Technicians and associate professionals	Female	32	0	7	7	14
	Male	11	0	7	2	9
Clerks	Female	73	0	4	0	4
	Male	24	0	4	0	4
Service and sales	Female	8	0	0	0	0
	Male	5	0	0	0	0
Skilled agriculture and fishery workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Craft and related trades workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Plant and machine operators and assemblers	Female	0	0	0	0	0
	Male	0	0			
Elementary occupations	Female	0	0	0	0	0
	Male	0	0	2	0	2
Subtotal	Female	229	0	21	24	45
	Male	150	0	21	17	38
Total		379	0	42	41	83

Table 3.13.2: Training provided in the period 1 April 2021 to 31 March 2022

Occupational category	Gender	Number of employees as at 1 April 2021	Training identified at start of the reporting period			
			Learnerships	Skills programmes and other short courses	Other forms of training	Total
Legislators, senior officials and managers	Female	49	0	6	5	11
	Male	49	0	10	4	14
Professionals	Female	67	0	7	10	17
	Male	61	0	6	7	13
Technicians and associate professionals	Female	32	0	0	0	0
	Male	11	0	1	0	1
Clerks	Female	73	0	15	10	25
	Male	24	0	7	3	10
Service and sales workers	Female	8	0	0	0	0
	Male	5	0	0	0	0
Skilled agriculture and fishery workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Craft and related trades workers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Plant and machine operators and assemblers	Female	0	0	0	0	0
	Male	0	0	0	0	0
Elementary occupations	Female	0	0	0	0	0
	Male	0	0	0	0	0
Subtotal	Female	229	0	28	25	53
	Male	150	0	24	14	38
Total		379	0	52	39	91

3.16 SEVERANCE PACKAGES

Table 3.16.1: Granting of employee-initiated severance packages in the period 1 April 2021 to 31 March 2022

Salary band	Number of applications received	Number of applications referred to the MPSA	Number of applications supported by MPSA	Number of packages approved by department
Lower skilled (Levels 1-2)	0	0	0	0
Skilled Levels 3-5)	0	0	0	0
Highly skilled production (Levels 6-8)	0	0	0	0
Highly skilled supervision (Levels 9-12)	0	0	0	0
Senior management (Levels 13-16)	0	0	0	0
Total	0	0	0	0

PART

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FIN



FINANCIAL INFORMATION

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REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON VOTE NO. 35: DEPARTMENT OF SCIENCE AND INNOVATION

REPORT ON THE AUDIT OF THE FINANCIAL STATEMENTS

OPINION

1. I have audited the financial statements of the Department of Science and Innovation set out on pages 144 to 284, which comprise the appropriation statement, statement of financial position as at 31 March 2022, statement of financial performance, statement of changes in net assets and cash flow statement for the year then ended, as well as notes to the financial statements, including a summary of significant accounting policies.
2. In my opinion, the financial statements present fairly, in all material respects, the financial position of the Department of Science and Innovation as at 31 March 2022, and its financial performance and cash flows for the year then ended in accordance with the Modified Cash Standard (MCS) and the requirements of the Public Finance Management Act 1 of 1999 (PFMA).

BASIS FOR OPINION

3. I conducted my audit in accordance with the International Standards on Auditing (ISAs). My responsibilities under those standards are further described in The Auditor-General's responsibilities for the audit of the financial statements section of my report.
4. I am independent of the department in accordance with the International Ethics Standards Board for Accountants' International Code of Ethics for Professional Accountants (including International Independence Standards) (IESBA Code) as well as other ethical requirements that are relevant to my audit in South Africa. I have fulfilled my other ethical responsibilities in accordance with these requirements and the IESBA code.
5. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

OTHER MATTERS

6. I draw attention to the matter below. My opinion is not modified in respect of this matter.

UNAUDITED SUPPLEMENTARY SCHEDULES

7. The supplementary information set out on pages 285 to 304 does not form part of the financial statements and is presented as additional information. I have not audited these schedules and, accordingly, I do not express an opinion on them.

RESPONSIBILITIES OF THE ACCOUNTING OFFICER FOR THE FINANCIAL STATEMENTS

8. The accounting officer is responsible for the preparation and fair presentation of the financial statements in accordance with the MCS and the requirements of the PFMA, and for such internal controls as the accounting officer determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.
9. In preparing the financial statements, the accounting officer is responsible for assessing the department's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless the appropriate governance structure either intends to liquidate the department or to cease operations, or has no realistic alternative but to do so.

AUDITOR-GENERAL'S RESPONSIBILITIES FOR THE AUDIT OF THE FINANCIAL STATEMENTS

10. My objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.
11. A further description of my responsibilities for the audit of the financial statements is included in the annexure to this auditor's report.

REPORT ON THE AUDIT OF THE ANNUAL PERFORMANCE REPORT

Introduction and scope

12. In accordance with the Public Audit Act 25 of 2004 (PAA) and the general notice issued in terms thereof, I have a responsibility to report on the usefulness and reliability of the reported performance information against predetermined objectives for selected programmes presented in the annual performance report. I performed procedures to identify material findings but not to gather evidence to express assurance.
13. My procedures address the usefulness and reliability of the reported performance information, which must be based on the department's approved performance planning documents. I have not evaluated the completeness and appropriateness of the performance indicators included in the planning documents. My procedures do not examine whether the actions taken by the department enabled service delivery. My procedures do not extend to any disclosures or assertions relating to the extent of achievements in the current year or planned performance strategies and information in respect of future periods that may be included as part of the reported performance information. Accordingly, my findings do not extend to these matters.
14. I evaluated the usefulness and reliability of the reported performance information in accordance with the criteria developed from the performance management and reporting framework, as defined in the general notice, for the following selected programme presented in the department's annual performance report for the year ended 31 March 2022:

Programme	Pages in the annual performance report
Programme 2: Technology Innovation	72 – 76

15. I performed procedures to determine whether the reported performance information was properly presented and whether performance was consistent with the approved performance planning documents. I performed further procedures to determine whether the indicators and related targets were measurable and relevant, and assessed the reliability of the reported performance information to determine whether it was valid, accurate and complete.
16. I did not identify any material findings on the usefulness and reliability of the reported performance information for this Programme:
 - Programme 2: Technology Innovation

Other matters

17. I draw attention to the matters below.

Achievement of planned targets

18. Refer to the annual performance report on pages 65 to 100 for information on the achievement of planned targets for the year and management's explanations provided for the under/overachievement of targets.

Adjustment of material misstatements

19. I identified material misstatements in the annual performance report submitted for auditing. These material misstatements were in the reported performance information of Programme 2: Technology Innovation. As management subsequently corrected the misstatements, I did not raise any material findings on the usefulness and reliability of the reported performance information.

Report on the audit of compliance with legislation

Introduction and scope

20. In accordance with the PAA and the general notice issued in terms thereof, I have a responsibility to report material findings on the department's compliance with specific matters in key legislation. I performed procedures to identify findings but not to gather evidence to express assurance.
21. I did not identify any material findings on compliance with the specific matters in key legislation set out in the general notice issued in terms of the PAA.

Other information

22. The accounting officer is responsible for the other information. The other information comprises the information included in the annual report. The other information does not include the financial statements, the auditor's report and the selected programmes presented in the annual performance report that have been specifically reported in this auditor's report.
23. My opinion on the financial statements and findings on the reported performance information and compliance with legislation do not cover the other information and I do not express an audit opinion or any form of assurance conclusion on it.
24. In connection with my audit, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements and the selected programme presented in the annual performance report, or my knowledge obtained in the audit, or otherwise appears to be materially misstated.
25. I did not receive the other information prior to the date of this auditor's report. When I do receive and read this information, and if I conclude that there is a material misstatement therein, I am required to communicate the matter to those charged with governance and request that the other information be corrected. If the other information is not corrected, I may have to retract this auditor's report and re-issue an amended report as appropriate. However, if it is corrected this will not be necessary.

Internal control deficiencies

26. I considered internal controls relevant to my audit of the financial statements, reported performance information and compliance with applicable legislation; however, my objective was not to express any form of assurance on it.
27. I did not identify any significant deficiencies in internal control.

Auditor-General

Pretoria
31 July 2022



AUDITOR - GENERAL
SOUTH AFRICA

Auditing to build public confidence

ANNEXURE: AUDITOR-GENERAL'S RESPONSIBILITY FOR THE AUDIT

1. As part of an audit in accordance with the ISAs, I exercise professional judgement and maintain professional scepticism throughout my audit of the financial statements and the procedures performed on reported performance information for selected programmes and on the department's compliance with respect to the selected subject matters.

Financial statements

2. In addition to my responsibility for the audit of the financial statements as described in this auditor's report, I also
 - identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error; design and perform audit procedures responsive to those risks; and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations or the override of internal control;
 - obtain an understanding of internal controls relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the department's internal controls;
 - evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the accounting officer;
 - conclude on the appropriateness of the accounting officer's use of the going concern basis of accounting in the preparation of the financial statements. I also conclude, based on the audit evidence obtained, whether a material uncertainty exists relating to events or conditions that may cast significant doubt on the ability of the department to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements about the material uncertainty or, if such disclosures are inadequate, to modify my opinion on the financial statements. My conclusions are based on the information available to me at the date of this auditor's report. However, future events or conditions may cause a department to cease operating as a going concern;
 - evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and determine whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

Communication with those charged with governance

3. I communicate with the accounting officer regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.
4. I also provide the accounting officer with a statement that I have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on my independence and, where applicable, actions taken to eliminate threats or safeguards applied.

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

APPROPRIATION STATEMENT	Appropriation per programme						2020/21		
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
1. Administration	334,724	-	(6,416)	328,308	304,454	23,854	92.7%	294,416	262,240
2. Technology Innovation	1,705,290	-	19,727	1,725,017	1,719,613	5,404	99.7%	1,397,065	1,379,841
3. International Cooperation and Resources	144,416	-	(8,140)	136,276	131,808	4,468	96.7%	119,302	114,229
4. Research, Development and Support	4,995,632	-	(571)	4,995,061	4,991,443	3,618	99.9%	3,735,718	3,730,976
5. Socio-Economic Innovation Partnerships	1,825,577	-	(4,600)	1,820,977	1,814,725	6,252	99.7%	1,731,786	1,677,979
TOTAL	9,005,638	-	-	9,005,638	8,962,043	43,595	99.5%	7,278,287	7,165,265
Reconciliation with Statement of Financial Performance									
ADD:									
Departmental receipts				1,090				2,241	
NRF Receipts				69,822				-	
Aid assistance				9,076,550				69,552	
Actual amounts per Statement of Financial Performance (Total Revenue)								7,350,080	
ADD:									
Aid assistance					59,915				69,131
Prior year unauthorised expenditure approved without funding					-				-
Actual amounts per Statement of Financial Performance (Total Expenditure)					9,021,998				7,234,396

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

APPROPRIATION STATEMENT	Appropriation per programme									
	2021/22					2020/21				
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure	
R'000	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000	
Economic Classification										
Current Payments	569,291	-	(47,409)	521,882	485,583	36,299	93.0%	481,362	428,954	
Compensation of employee	363,326	-	-	363,326	332,751	30,575	91.6%	361,993	321,938	
Salaries and Wages	332,163	(7,501)	-	324,662	298,060	26,602	91.8%	314,520	287,739	
Social contributions	31,163	7,501	-	38,664	34,691	3,973	89.7%	47,473	34,199	
Goods and services	205,965	-	(47,409)	158,556	152,832	5,724	96.4%	119,369	107,016	
Administrative fees	1,389	(528)	(340)	521	229	292	44.0%	640	95	
Advertising	19,406	2,589	(194)	21,801	21,340	461	97.9%	4,684	4,260	
Minor assets	5,173	(5,000)	-	173	40	133	23.2%	334	283	
Audit costs: External	5,000	380	-	5,380	5,380	-	100.0%	4,225	4,219	
Bursaries: Employees	1,328	97	-	1,425	1,397	28	98.0%	538	469	
Catering: Departmental Activities	1,933	(658)	(880)	395	111	284	28.2%	704	282	
Communication (G&S)	11,164	1,874	(1,788)	11,250	10,930	319	97.2%	12,534	12,560	
Computer services	15,709	13,223	(124)	28,808	28,620	188	99.3%	25,836	25,615	
Consultants: Business and advisory services	31,404	(6,151)	(10,860)	14,393	13,944	448	96.9%	9,966	10,322	
Scientific and technological services	-	-	-	-	-	-	-	-	-	
Legal Services	405	430	-	835	720	115	86.2%	825	813	
Contractors	3,207	-	(2,150)	1,057	982	75	92.9%	1,681	1,672	

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

APPROPRIATION STATEMENT	Appropriation per programme									
	2021/22					2020/21				
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure	
R'000	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000	
Agency and support/outsourced Services	25,323	(5,058)	(5,590)	14,675	14,239	436	97.0%	9,479	10,242	
Entertainment	4,812	(329)	(3,950)	533	39	494	7.4%	486	28	
Fleet services (inc government motor transport)	1,444	(348)	-	1,096	987	109	90.0%	785	778	
Inventory: Clothing, material and accessories	-	-	-	-	-	-	-	-	-	
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-	
Inventory: Material and Supplies	-	-	-	-	-	-	-	-	-	
Inventory: Medical Supplies	-	-	-	-	-	-	-	-	-	
Inventory: Other supplies	-	-	-	-	-	-	-	-	-	
Consumable supplies	4,582	(619)	(2,000)	1,963	1,834	129	93.4%	1,423	1,231	
Consumable: Stationery, printing and office supplies	1,866	301	(120)	2,047	1,569	478	76.6%	1,735	1,642	
Operating Leases	2,256	1,450	-	3,706	3,681	25	99.3%	4,282	4,129	
Property payments	14,223	2,983	(900)	16,306	16,226	80	99.5%	13,571	13,307	
Transport provided:	-	-	-	-	-	-	-	-	-	
Departmental activity	-	-	-	-	-	-	-	-	-	

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

APPROPRIATION STATEMENT	Appropriation per programme									
	2021/22					2020/21				
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure	
R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000		
Travel and subsistence	32,585	(4,808)	(10,865)	16,912	16,318	594	96.5%	8,684	7,278	
Training and development	5,824	(3,267)	(900)	1,657	1,489	168	89.8%	6,703	2,217	
Operating payments	7,356	5,269	(2,467)	10,158	9,931	227	97.8%	8,080	3,786	
Venues and facilities	8,546	(1,760)	(4,281)	2,505	2,308	196	92.2%	2,074	1,457	
Rental and hiring	1,032	(70)	-	962	516	445	53.7%	100	331	
Transfers and subsidies	8,430,994	-	39,931	8,470,925	8,467,427	3,498	100.0%	6,789,431	6,729,702	
Departmental agencies and accounts	6,520,587	-	2,118	6,522,705	6,017,023	505,682	92.2%	5,156,034	4,721,326	
Departmental agencies	6,520,587	-	2,118	6,522,705	6,017,023	505,682	92.2%	5,156,034	4,721,326	
Higher education Institutions	-	-	-	-	240,526	(240,526)	-	-	252,948	
Foreign governments and international organisations	-	-	-	-	2,000	(2,000)	-	-	-	
Public corporations and private enterprises	1,512,323	-	-	1,512,323	1,957,502	(445,179)	129.4%	1,237,811	1,495,783	
Public corporation	1,512,323	-	-	1,512,323	1,814,291	(301,968)	120.0%	1,237,811	1,481,169	
Subsidies on	-	-	-	-	-	-	-	-	-	
Products	978,449	-	-	978,449	978,449	-	100.0%	893,581	893,581	
Other transfers to public corporation	533,874	-	-	533,874	835,842	(301,968)	156.6%	344,230	587,588	
Private enterprises	-	-	-	-	143,210	(143,210)	-	-	14,614	
Other transfers to private enterprises	-	-	-	-	143,210	(143,210)	-	-	14,614	

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

APPROPRIATION STATEMENT	Appropriation per programme									
	2021/22					2020/21				
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure	
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000	R'000
Non-profit institution	398,084	-	37,241	435,325	249,246	186,079	57.3%	395,086	259,117	
Households	-	-	572	572	1,130	(558)	197.5%	500	528	
Social benefits	-	-	512	512	1,070	(558)	209.0%	500	478	
Other transfers to Households	-	-	60	60	60	-	100.0%	-	50	
Payments for capital assets	5,353	-	7,378	12,731	8,941	3,790	70.2%	6,994	6,062	
Buildings and other fixed Structures	5,353	-	7,378	12,731	8,941	3,790	70.2%	6,994	6,062	
Machinery and equipment	2,000	-	1,000	3,000	1,530	1,470	51.0%	-	-	
Transport equipment	3,353	-	6,378	9,731	7,411	2,320	76.2%	6,994	6,062	
Other machinery and Equipment	-	-	-	-	-	-	-	-	-	
Software and other intangible assets	-	-	-	-	-	-	-	-	-	
Payments for financial assets	-	-	100	100	92	8	92.0%	500	547	
Total	9,005,638	-	-	9,005,638	8,962,043	43,595	99.5%	7,278,287	7,165,265	

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Detail per programme 1 – Administration for the year ended 31 March 2022									
Sub-programme	2021/22					2020/21			
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
1.1 Ministry	5,597	-	-	5,597	2,581	3,016	46.1%	5,886	4,855
1.2 Institutional Planning and Support	170,292	(500)	(14,145)	155,647	145,262	10,385	93.3%	127,539	113,247
1.3 Corporate Services	153,277	(4,700)	7,729	156,306	145,922	10,384	93.4%	151,684	134,907
1.4 Office Accommodation	5,558	5,200	-	10,758	10,689	69	99.4%	9,307	9,231
Total	334,724	-	(6,416)	328,308	304,454	23,854	92.7%	294,416	262,240
Economic Classification									
Current payments	314,107	-	(14,245)	299,862	279,577	20,285	93.2%	271,161	239,879
Compensation of employees	172,538	-	-	172,538	154,952	17,586	89.8%	170,401	151,579
Salaries and Wages	161,899	(6,200)	-	155,699	138,296	17,403	88.8%	146,351	135,141
Social contributions	10,639	6,200	-	16,839	16,656	183	98.9%	24,050	16,438
Goods and services	141,569	-	(14,245)	127,324	124,625	2,699	97.9%	100,760	88,300
Administrative fees	358	(150)	-	208	166	42	80.0%	252	79
Advertising	18,490	3,021	-	21,511	21,284	227	98.9%	4,286	4,254
Minor assets	5,159	(5,000)	-	159	40	119	25.2%	319	283
Audit costs: External	5,000	380	-	5,380	5,380	-	100.0%	4,225	4,219

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Detail per programme 1 – Administration for the year ended 31 March 2022									
Sub-programme	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	2020/21	
								R'000	R'000
Bursaries: Employees	1,300	97	-	1,397	1,397	-	100.0%	510	469
Catering:	851	-	(700)	151	90	61	59.6%	77	36
Departmental activities	5,497	1,560	(600)	6,457	6,376	81	98.7%	6,639	6,605
Communication (G&S)	15,273	13,382	-	28,655	28,581	74	99.7%	25,575	25,542
Computer services	19,019	(6,200)	(4,300)	8,519	8,415	104	98.8%	5,222	5,212
Consultants: Business & advisory services	205	225	-	430	430	-	100.0%	516	509
Science & Technological Services	2,918	-	(1,900)	1,018	982	36	96.5%	1,681	1,672
Legal Services	16,879	(5,800)	(1,000)	10,079	9,785	294	97.1%	7,833	7,821
Contractors	351	-	-	351	36	315	10.3%	19	11
Agency and support/outsourced	1,444	(348)	-	1,096	987	109	90.0%	785	778
Services	-	-	-	-	-	-	-	-	-
Entertainment	-	-	-	-	-	-	-	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing, material accessories	-	-	-	-	-	-	-	-	-
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-
Inventory: Material and Supplies	-	-	-	-	-	-	-	-	-
Inventory: Other supplies	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
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Detail per programme 1 – Administration for the year ended 31 March 2022									
Sub-programme	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	2020/21	
								Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Consumable supplies	4,233	(550)	(1,800)	1,883	1,801	82	95.7%	1,306	1,226
Consumable: Stationery, printing and office supplies	1,305	505	-	1,810	1,471	339	81.3%	1,702	1,616
Operating Leases	2,256	1,450	-	3,706	3,681	25	99.3%	4,282	4,129
Property payments	13,281	3,000	-	16,281	16,226	55	99.7%	13,531	13,307
Transport provided:	-	-	-	-	-	-	-	-	-
Departmental activity	16,882	(4,300)	(1,145)	11,437	11,024	413	96.4%	5,964	4,471
Travel and subsistence	2,900	(1,400)	-	1,500	1,489	11	99.2%	6,563	1,557
Training and development	5,240	264	(1,800)	3,704	3,639	65	98.2%	7,626	3,231
Operating payments	2,418	(140)	(1,000)	1,278	1,204	74	94.2%	1,747	1,185
Venues and facilities	312	4	-	316	140	175	44.4%	100	88
Rental and hiring	15,264	-	351	15,615	15,844	(229)	101.5%	15,822	15,813
Transfers and subsidiaries	-	-	-	-	-	-	-	-	315
Departmental agencies and Accounts	-	-	-	-	-	-	-	-	315
Departmental agencies	-	-	-	-	3,121	(3,121)	-	-	9,384
Higher education Institutions	-	-	-	-	-	-	-	-	-
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	-	-	-	-	-	-	-	-	-
Public corporation	-	-	-	-	-	-	-	-	-

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Detail per programme 1 – Administration for the year ended 31 March 2022										
Sub-programme	Adjusted appropriation	Shifting of funds	2021/22			Actual expenditure	Variance	Expenditure as % of final appropriation	2020/21	
			R'000	R'000	R'000				Final appropriation	Actual expenditure
Subsidies on Products	-	-	-	-	-	-	-	-	-	-
Other transfers to public corporation	-	-	-	-	-	-	-	-	-	-
Private enterprises	-	-	-	-	-	-	-	-	-	-
Other transfers to private Enterprises	-	-	-	-	-	-	-	-	-	-
Non-profit institution	15,264	-	-	-	-	12,021	3,243	78.8%	15,594	5,896
Households	-	-	351	-	702	702	(351)	200.0%	228	218
Social benefits	-	-	351	-	702	702	(351)	200.0%	228	218
Other transfers to Households	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	5,353	-	-	-	-	8,941	3,790	70.2%	6,994	6,062
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	5,353	-	7,378	-	8,941	8,941	3,790	70.2%	6,994	6,062
Transport equipment	2,000	-	1,000	-	1,530	1,530	1,470	51.0%	-	-
Other machinery and Equipment	3,353	-	6,378	-	7,411	7,411	2,320	76.2%	6,994	6,062
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-

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Detail per programme 1 – Administration for the year ended 31 March 2022									
Sub-programme	2021/22					2020/21			
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Payment for financial assets	-	-	100	100	92	8	92.0%	439	486
Total	334,724	-	(6,416)	328,308	304,454	23,854	92.7%	294,416	262,240

Detail per programme 1 – Administration for the year ended 31 March 2022									
Sub-programme 1.1: Ministry	2021/22					2020/21			
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	5,597	-	-	5,597	2,581	3,016	46.1%	5,886	4,855
Compensation of employees	5,597	-	-	5,597	2,581	3,016	46.1%	5,886	4,855
Salaries and Wages	5,440	(200)	-	5,240	2,234	3,006	42.6%	5,186	4,211
Social contributions	157	200	-	357	346	11	97.1%	700	644
Goods and services	-	-	-	-	-	-	-	-	-
Administrative fees	-	-	-	-	-	-	-	-	-
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-

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Sub-programme: 1.2 : Institutional Planning and Support	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	155,028	(500)	(14,245)	140,283	129,718	10,565	92.5%	111,423	97,087
Compensation of employees	87,935	-	-	87,935	79,607	8,328	90.5%	85,921	71,871
Salaries and Wages	83,522	(3,000)	-	80,522	72,220	8,302	89.7%	74,375	65,427
Social contributions	4,413	3,000	-	7,413	7,387	26	99.6%	11,546	6,444
Goods and services	67,093	(500)	(14,245)	52,348	50,111	2,237	95.7%	25,502	25,216
Administrative fees	240	(100)	-	140	105	35	75.3%	30	27
Advertising	17,990	3,000	-	20,990	20,754	236	98.9%	3,711	3,699
Minor assets	478	(400)	-	78	-	78	-	17	15
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	800	-	(700)	100	70	30	70.0%	16	15
Communication (G&S)	3,362	-	(600)	2,762	2,681	81	97.1%	3,041	3,036
Computer services	-	600	-	600	526	74	87.7%	75	73
Consultants: Business & advisory services	10,059	-	(4,300)	5,759	5,727	32	99.4%	4,900	4,898
Legal Services	-	-	-	-	-	-	-	424	422
Contractors	1,940	-	(1,900)	40	40	(0)	100.1%	15	10
Agency and support/outsourced Services	6,682	(900)	(1,000)	4,782	4,548	234	95.1%	4,491	4,486
Entertainment	333	-	-	333	33	300	9.8%	14	10
Fleet services (Inc. government motor transport)	516	300	-	816	737	79	90.3%	585	584
Inventory: Clothing, material & accessories	-	-	-	-	-	-	-	-	-

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Sub-programme: 1.3: Corporate Services	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	147,924	(4,700)	-	143,224	136,589	6,635	95.4%	144,545	128,706
Compensation of employees	79,006	-	-	79,006	72,765	6,241	92.1%	78,594	74,853
Salaries and Wages	72,937	(3,000)	-	69,937	63,842	6,095	91.3%	66,790	65,503
Social contributions	6,069	3,000	-	9,069	8,923	146	98.4%	11,804	9,350
Goods and services	68,918	(4,700)	-	64,218	63,824	394	99.4%	65,951	53,853
Administrative fees	118	(50)	-	68	61	7	89.7%	222	52
Advertising	500	21	-	521	530	(9)	101.7%	575	555
Minor assets	4,681	(4,600)	-	81	40	41	49.4%	302	268
Audit costs: External	5,000	380	-	5,380	5,380	-	100.0%	4,225	4,219
Bursaries: Employees	1,300	97	-	1,397	1,397	-	100.0%	510	469
Catering: Departmental Activities	51	-	-	51	20	31	39.2%	61	21
Communication (G&S)	2,135	1,560	-	3,695	3,695	-	100.0%	3,598	3,569
Computer services	15,273	12,782	-	28,055	28,055	-	100.0%	25,500	25,469
Consultants: Business & advisory services	8,960	(6,200)	-	2,760	2,688	72	97.4%	322	314
Scientific & Technological Services	-	-	-	-	-	-	-	-	-
Legal Services	205	225	-	430	430	-	100.0%	92	87
Contractors	978	-	-	978	942	36	96.3%	1,666	1,662
Agency and support/outsourced Services	10,197	(4,900)	-	5,297	5,237	60	98.9%	3,342	3,335
Entertainment	18	-	-	18	4	14	20.4%	5	1
Fleet services (Inc. government motor transport)	928	(648)	-	280	250	30	89.2%	200	194

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Inventory: Clothing, Material & accessories	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Inventory: Material and Supplies-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Inventory: Other supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Consumable supplies	1,995	(550)	1,445	1,399	46	96.8%	1,264	1,195																	
Consumable: Stationery, printing and office supplies	734	505	1,239	1,239	-	100.0%	1,442	1,360																	
Operating Leases	1,116	(250)	866	864	2	99.8%	1,592	1,564																	
Property payments	8,863	(500)	8,363	8,354	9	99.9%	6,703	6,640																	
Transport provided:	-	-	-	-	-	-	-	-																	
Departmental Activity	1,893	(1,300)	593	551	42	92.9%	-	-																	
Travel and subsistence	2,900	(1,400)	1,500	1,489	11	99.2%	1,970	487																	
Training and Development	803	264	1,067	1,067	-	100.0%	6,563	1,557																	
Operating payments	170	(140)	30	29	1	97.5%	4,738	345																	
Venues and facilities	100	4	104	104	-	100.0%	959	402																	
Rental and hiring	1,995	(550)	1,445	1,399	46	96.8%	100	88																	
Transfers and subsidies	-	-	351	392	(41)	111.6%	145	139																	
Departmental agencies and Accounts	-	-	-	-	-	-	-	-																	
Higher education Institutions	-	-	-	-	-	-	-	-																	
Foreign governments and international organisations	-	-	-	-	-	-	-	-																	
Public corporations and private enterprises	-	-	-	-	-	-	-	-																	
Public corporation	-	-	-	-	-	-	-	-																	
Subsidies on products	-	-	-	-	-	-	-	-																	
Other transfers to public corporation	-	-	-	-	-	-	-	-																	
Private enterprise	-	-	-	-	-	-	-	-																	

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Other transfers to private Enterprises	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-profit institution	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Households	-	-	351	-	-	351	-	-	-	-	392	(41)	-	-	-	145	139	139	139
Social benefits	-	-	351	-	-	351	-	-	-	392	(41)	-	-	-	-	145	139	139	139
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	5,353	-	7,378	-	-	12,731	8,941	3,790	70.2%	6,994	6,062	6,062	6,062	6,062	6,062	6,062	6,062	6,062	6,062
Buildings and other fixed structures	5,353	-	7,378	-	-	12,731	8,941	3,790	70.2%	6,994	6,062	6,062	6,062	6,062	6,062	6,062	6,062	6,062	6,062
Machinery and equipment	2,000	-	1,000	-	-	3,000	1,530	1,470	51.0%	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and Equipment	3,353	-	6,378	-	-	9,731	7,411	2,320	76.2%	6,994	6,062	6,062	6,062	6,062	6,062	6,062	6,062	6,062	6,062
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	153,277	(4,700)	7,729	156,306	145,922	10,384	93.4%	151,684	134,907	134,907	134,907	134,907	134,907	134,907	134,907	134,907	134,907	134,907	134,907

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Sub programme: 1.4 Office Accommodation	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	5,558	5,200	-	10,758	10,689	69	99.4%	9,307	9,231
Compensation of employees	-	-	-	-	-	-	-	-	-
Salaries and Wages	-	-	-	-	-	-	-	-	-
Social contributions	-	-	-	-	-	-	-	-	-
Goods and services	5,558	5,200	-	10,758	10,689	69	99.4%	9,307	9,231
Administration fees	-	-	-	-	-	-	-	-	-
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	-	-	-	-	-	-	-	-	-
Communication (G&S)	-	-	-	-	-	-	-	-	-
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	-	-	-	-	-	-	-	-	-
Entertainment	-	-	-	-	-	-	-	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-

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Social benefits	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and Equipment	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-
Total	5,558	5,200	10,758	10,689	69	99.4%	9,307	9,231				

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Detail per programme 2 – Technology Innovation for the year ended 31 March 2022									
Sub-programme	2021/22					2020/21			
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
2.1 Space Science	280,220	211	8,625	289,056	286,289	2,767	99.0%	250,634	241,741
2.2 Hydrogen and Energy	188,277	-	(3,410)	184,867	184,782	85	100.0%	185,829	184,519
2.3 Bio-economy	204,079	(211)	34,011	237,879	237,106	772	99.7%	228,148	226,997
2.4 Innovation Priorities and Instruments	971,153	-	(16,535)	954,618	953,934	684	99.9%	675,039	671,945
2.5 National Intellectual Property Management Office	56,809	(659)	(1,760)	54,390	53,316	1,074	98.0%	53,586	51,021
2.6 Office of the DDG: Technology Innovation	4,752	659	(1,204)	4,207	4,186	21	99.5%	3,829	3,618
Total	1,705,290	-	19,727	1,725,017	1,719,613	5,404	99.7%	1,397,065	1,379,841
Economic classification									
Current payments	75,543	-	(17,844)	57,699	52,542	5,157	91.1%	58,590	47,211
Compensation of employees	52,391	-	(2,875)	49,516	44,659	4,857	90.2%	52,212	40,263
Salaries and Wages	44,925	360	(2,875)	42,410	40,072	2,337	94.5%	44,371	36,068
Social contributions	7,466	(360)	-	7,106	4,587	2,519	64.5%	7,841	4,195
Goods and services	23,152	-	(14,969)	8,183	7,883	300	96.3%	6,378	6,948
Administrative fees	299	(242)	(30)	27	17	10	62.4%	122	3
Advertising	339	(234)	(20)	85	56	29	65.9%	124	-

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	Detail per programme 2 – Technology Innovation for the year ended 31 March 2022														
	2021/22					2020/21									
Minor assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bursaries: Employees	28	-	-	28	-	-	-	28	-	-	-	28	-	-	-
Catering: Departmental	439	(303)	(90)	46	9	37	19.6%	64	3	64	19.6%	3	3	3	3
Activities	983	41	(4)	1,020	995	25	97.5%	1,377	1,145	1,377	97.5%	1,145	1,145	1,145	1,145
Computer services	-	-	-	-	-	-	-	-	12	15	-	12	12	12	12
Consultants: Business & advisory services	1,365	1,307	(480)	2,192	2,192	0	100.0%	2,986	3,495	2,986	100.0%	3,495	3,495	3,495	3,495
Legal Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Services	5,018	544	(3,190)	2,372	2,336	36	98.5%	601	1,466	601	98.5%	1,466	1,466	1,466	1,466
Entertainment	3,501	(56)	(3,400)	45	1	44	2.2%	48	-	48	2.2%	-	-	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory: Clothing, material & supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accessories	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory: Material and Supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory: Other supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumable supplies	109	(86)	-	23	6	17	24.1%	53	3	53	24.1%	3	3	3	3
Consumable: Stationery, printing and office supplies	20	2	(20)	2	2	(0)	117.7%	-	-	-	117.7%	-	-	-	-

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	Detail per programme 2 – Technology Innovation for the year ended 31 March 2022												
	2021/22					2020/21							
Operating Leases	-	-	-	-	-	-	-	-	-	-	-	-	-
Property payments	357	(7)	-	-	-	-	-	-	-	-	-	-	-
Transport provided:	-	-	-	-	-	-	-	-	-	-	-	-	-
Departmental activity	-	-	-	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	6,642	75	(5,220)	1,497	1,469	28	-	-	601	592	-	-	-
Training and development	997	(97)	(900)	-	-	-	-	-	140	137	-	-	-
Operating payments	761	(219)	(470)	72	71	1	-	-	121	23	-	-	-
Venues and facilities	2,082	(513)	(795)	774	730	44	-	-	98	69	-	-	-
Rental and hiring	212	(212)	-	-	-	-	-	-	-	-	-	-	-
Transfers and subsidies	1,629,747	-	37,571	1,667,318	1,667,071	247	-	-	1,338,475	1,332,630	-	-	-
Departmental agencies and													
 Accounts	1,195,772	-	325	1,196,097	1,224,005	(27,908)	-	-	910,734	1,045,352	-	-	-
Departmental agencies	1,195,772	-	325	1,196,097	1,224,005	(27,908)	-	-	910,734	1,045,352	-	-	-
Higher education Institutions	-	-	-	-	62,351	(62,351)	-	-	-	111,963	-	-	-
Public corporations and													
 private enterprises	108,989	-	-	108,989	349,576	(240,587)	-	-	98,600	117,963	-	-	-
Public corporation	108,989	-	-	108,989	207,099	(98,110)	-	-	98,600	113,542	-	-	-
Subsidies on products	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to public corporation	108,989	-	-	108,989	207,099	(98,110)	-	-	98,600	113,542	-	-	-
Private enterprises	-	-	-	-	142,477	(142,477)	-	-	-	4,421	-	-	-
Other transfers to private enterprises	-	-	-	-	142,477	(142,477)	-	-	-	4,421	-	-	-
Non-profit institution	324,986	-	37,241	362,227	31,135	331,092	-	-	329,141	57,352	-	-	-
 Households	-	-	5	5	5	0	0	0	-	-	-	-	-
Social benefits	-	-	5	5	5	0	0	0	-	-	-	-	-
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-	-	-

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		Detail per programme 2 – Technology Innovation for the year ended 31 March 2022							
		2021/22					2020/21		
Payment for capital assets		-	-	-	-	-	-	-	-
Buildings and other fixed structures		-	-	-	-	-	-	-	-
Machinery and equipment		-	-	-	-	-	-	-	-
Transport equipment		-	-	-	-	-	-	-	-
Other machinery and equipment		-	-	-	-	-	-	-	-
Software and other intangible assets		-	-	-	-	-	-	-	-
Payment for financial assets		-	-	-	-	-	-	-	-
Total		1,705,290	19,727	1,725,017	1,719,613	5,404	99.7%	1,397,065	1,379,841

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Detail per programme 2 – Technology Innovation for the year ended 31 March 2022										
Sub-programme: 2.1: Space Science	2021/22					2020/21				
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure	
Current payments	14,698	211	(2,875)	12,034	9,422	2,612	78.3%	12,297	8,086	
Compensation of employees	11,476	-	(2,875)	8,601	5,989	2,612	69.6%	10,064	5,887	
Salaries and Wages	10,135	-	(2,875)	7,260	5,439	1,821	74.9%	8,682	5,332	
Social contributions	1,341	-	-	1,341	550	791	41.0%	1,382	555	
Goods and services	3,222	211	-	3,433	3,433	-	100.0%	2,233	2,199	
Administrative fees	94	(93)	-	1	1	-	100.0%	1	1	
Advertising	239	(239)	-	-	-	-	-	-	-	
Minor assets	-	-	-	-	-	-	-	-	-	
Audit costs: External	-	-	-	-	-	-	-	-	-	
Bursaries: Employees	-	-	-	-	-	-	-	-	-	
Catering: Departmental	-	-	-	-	-	-	-	-	-	
Activities	298	(297)	-	1	1	-	100.0%	1	1	
Communication (G&S)	350	(191)	-	159	159	-	100.0%	436	434	
Computer services	-	-	-	-	-	-	-	-	-	
Consultants: Business & advisory services	444	911	-	1,355	1,355	-	100.0%	1,113	1,108	
Legal Services	-	-	-	-	-	-	-	-	-	
Contractors	-	-	-	-	-	-	-	-	-	
Agency and support/outourced Services	382	786	-	1,168	1,168	-	100.0%	605	604	
Entertainment	41	(41)	-	-	-	-	-	-	-	

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Private enterprises	-	-	-	-	977	(977)	-	-	-	-
Other transfers to private enterprises	-	-	-	-	977	(977)	-	-	-	-
Non-profit institution	-	-	-	-	-	-	-	-	-	-
Households	-	-	-	-	-	-	-	-	-	-
Social benefit	-	-	-	-	-	-	-	-	-	-
Other transfers to households	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-
Total	280,220	211	8,625	289,056	286,289	2,767	99.0%	250,634	241,741	-

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Sub-programme	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
2.2: Hydrogen & Energy									
Current payments	12,050	-	(3,410)	8,640	8,555	85	99.0%	9,660	8,350
Compensation of employees	8,087	-	-	8,087	8,013	74	99.1%	8,501	7,561
Salaries and Wages	7,207	-	-	7,207	7,154	53	99.3%	7,603	6,764
Social contributions	880	-	-	880	858	22	97.5%	898	797
Goods and services	3,963	-	(3,410)	553	542	11	98.0%	1,159	789
Administrative fees	57	(54)	-	3	3	-	100.0%	26	1
Advertising	-	-	-	-	-	-	-	85	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	100	(8)	(90)	2	2	-	100.0%	21	126
Communication (G&S)	100	74	-	174	174	-	100.0%	215	-
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	200	(5)	(160)	35	35	-	100.0%	494	484
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	-	-	-	-	-	-	-	2	-
Entertainment	-	-	-	-	-	-	-	8	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing, material & accessories	-	-	-	-	-	-	-	-	-

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Households	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Social benefit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	188,277	(3,410)	184,867	184,782	85	100.0%	185,829	184,519													

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Sub-programme: 2.3: Bio-economy	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	20,178	(211)	(3,235)	16,732	15,990	741	95.6%	14,396	14,113
Compensation of employees	13,905	-	-	13,905	13,425	480	96.5%	13,732	12,361
Salaries and Wages	12,482	-	-	12,482	12,161	320	97.4%	12,055	11,172
Social contributions	1,423	-	-	1,423	1,263	160	88.8%	1,677	1,189
Goods and services	6,273	(211)	(3,235)	2,827	2,566	261	90.8%	664	1,752
Administrative fees	74	(40)	(30)	4	1	3	19.5%	76	-
Advertising	39	(10)	-	29	-	29	-	39	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	28	-	-	28	-	28	-	28	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	36	-	-	36	-	36	-	36	-
Communication (G&S)	328	(50)	-	278	261	17	93.8%	331	195
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	322	329	-	651	651	0	99.9%	325	891
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced services	2,967	(179)	(1,700)	1,088	1,058	30	97.3%	(311)	566
Entertainment	38	-	-	38	-	38	-	38	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing, material & accessories	-	-	-	-	-	-	-	-	-

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Households																						
Social benefit	-	-	5	5	5	5	0														30	
Other transfers to Households	-	-	5	5			0														30	
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total	204,079	(211)	34,011	237,879	237,106	772															226,997	
																						99.7%
																						96.0%

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Sub-programme: 2.4 Innovation Priorities and Instrument	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	12,056	-	(5,360)	6,696	6,093	603	91.0%	7,285	4,191
Compensation of employees	6,435	-	-	6,435	5,838	597	90.7%	6,772	3,723
Salaries and Wages	4,878	360	-	5,238	5,230	8	99.9%	5,046	3,308
Social contributions	1,557	(360)	-	1,197	608	589	50.8%	1,726	415
Goods and services	5,621	-	(5,360)	261	255	6	97.7%	513	468
Administrative fees	-	-	-	-	-	-	-	-	-
Advertising	56	(36)	(20)	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	4	(2)	-	2	2	-	100.0%	4	-
Communication (G&S)	14	118	-	132	132	-	100.0%	82	82
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	-	96	-	96	96	-	100.0%	425	386
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	914	(14)	(900)	-	-	-	-	-	-
Entertainment	3,406	-	(3,400)	6	-	6	-	2	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
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Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
2.5: National Intellectual Property Management Office									
Current payments	11,809	(659)	(1,760)	9,390	8,295	1,095	88.3%	11,123	8,853
Compensation of employees	9,436	(659)	-	8,777	7,683	1,094	87.5%	9,478	7,229
Salaries and Wages	7,443	(501)	-	6,942	6,807	135	98.0%	7,740	6,393
Social contributions	1,993	(158)	-	1,835	877	958	47.8%	1,738	836
Goods and services	2,373	-	(1,760)	613	612	1	99.8%	1,645	1,624
Administrative fees	16	(15)	-	1	1	-	100.0%	11	-
Advertising	5	51	-	56	56	-	100.0%	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	1	4	-	5	4	1	80.0%	2	2
Communication (G&S)	104	100	-	204	204	-	100.0%	273	269
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	399	(24)	(320)	55	55	-	100.0%	629	626
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	409	(9)	(290)	110	110	-	100.0%	296	296
Entertainment	16	(15)	-	1	1	-	100.0%	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

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Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory: Material and Supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inventory: Other supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumable supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumable: Stationery, printing and office supplies	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Leases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Property payments	357	-	(350)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport provided:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Departmental Activity	563	147	(400)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Training and development	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating payments	503	24	(400)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Venues and facilities	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rental and hiring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfers and subsidies	45,000	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Departmental agencies and Accounts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Departmental agencies	-	3,471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Higher education Institutions	-	3,471	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foreign governments and international organisations	-	3,471	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	-	33,805	(33,805)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporation	-	7,745	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subsidies on products	-	7,745	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to public corporation	-	7,745	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private enterprises	-	7,745	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfers and subsidies	45,000	45,020	(20)	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Departmental agencies and Accounts	-	3,471	(3,471)	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Higher education Institutions	-	3,471	(3,471)	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	-	33,805	(33,805)	(33,805)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporation	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subsidies on products	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to public corporation	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private enterprises	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	45,000	45,020	(20)	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfers and subsidies	45,000	45,020	(20)	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Departmental agencies and Accounts	-	3,471	(3,471)	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Higher education Institutions	-	3,471	(3,471)	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	-	33,805	(33,805)	(33,805)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporation	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subsidies on products	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to public corporation	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private enterprises	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	45,000	45,020	(20)	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfers and subsidies	45,000	45,020	(20)	(20)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Departmental agencies and Accounts	-	3,471	(3,471)	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Higher education Institutions	-	3,471	(3,471)	(3,471)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises	-	33,805	(33,805)	(33,805)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public corporation	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subsidies on products	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to public corporation	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private enterprises	-	7,745	(7,745)	(7,745)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35

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Other transfers to private Enterprises	-	-	-	-	-	-	-	-	-	-	-	4,421
Non-profit institution	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	1,630
Households	-	-	-	-	-	-	-	-	-	-	-	-
Social benefits	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-
Total	56,809	(659)	(1,760)	54,390	53,316	1,074	98.0%	53,586	51,021	51,021	51,021	51,021

SCIENCE AND INNOVATION - VOTE 35
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Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
2.6: Office of the DDG: Technology Innovation									
Current payments	4,752	659	(1,204)	4,207	4,186	21	99.5%	3,829	3,618
Compensation of employees	3,052	659	-	3,711	3,711	-	100.0%	3,665	3,502
Salaries and Wages	2,780	501	-	3,281	3,281	-	100.0%	3,245	3,099
Social contributions	272	158	-	430	430	-	100.0%	420	403
Goods and services	1,700	-	(1,204)	496	475	21	95.8%	164	116
Administrative fees	58	(40)	-	18	11	7	61.5%	8	1
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	-	-	-	-	-	-	-	-	-
Communication (G&S)	87	(10)	(4)	73	65	8	88.6%	40	39
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	346	(40)	(300)	6	-	6	-	9	-
Entertainment	-	-	-	-	-	-	-	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
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Other transfers to private Enterprises	-	-	-	-	-	-	-	-	-	-	-
Non-profit institution	-	-	-	-	-	-	-	-	-	-	-
Households	-	-	-	-	-	-	-	-	-	-	-
Social benefits	-	-	-	-	-	-	-	-	-	-	-
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-
Total	4,752	659	(1,204)	4,207	4,186	21	99.5%	3,829	3,618		

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Detail per programme 3 – International Cooperation and Resources for the year ended 31 March 2022									
Sub-programme	2021/22					2020/21			
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
3.1 Multilateral Cooperation and Africa	29,282	-	(310)	28,972	28,477	495	98.3%	27,551	26,395
3.2 International Resources	67,082	-	-	67,082	65,008	2,074	96.9%	58,601	57,667
3.3 Overseas Bilateral Cooperation	43,028	(2,072)	(6,780)	34,176	32,376	1,800	94.7%	26,974	24,393
3.4 Office of the DDG: International Cooperation and Resources	5,024	2,072	(1,050)	6,046	5,948	98	98.4%	6,176	5,774
Total	144,416	-	(8,140)	136,276	131,808	4,468	96.7%	119,302	114,229

Economic classification									
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Current payments	69,912	-	(8,264)	61,648	56,973	4,675	92.4%	57,480	51,947
Compensation of employees	54,008	-	(1,500)	52,508	48,345	4,163	92.1%	53,805	47,315
Salaries and Wages	48,046	-	(1,500)	46,546	43,635	2,911	93.7%	47,681	42,501
Social contributions	5,962	-	-	5,962	4,710	1,252	79.0%	6,124	4,814
Goods and services	15,904	-	(6,764)	9,140	8,629	511	94.4%	3,675	4,632
Administrative fees	483	(100)	(310)	73	5	68	7.5%	179	8
Advertising	315	(68)	(174)	73	-	73	-	251	-
Minor assets	14	-	-	14	-	14	-	15	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-

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Economic classification														
Catering: Departmental Activities	369	(260)	(90)	19	5	14	28.7%	297	3					
Communication (G&S)	1,874	103	(390)	1,587	1,569	18	98.9%	1,425	1,905					
Computer services	164	(120)	-	44	39	5	88.2%	204	23					
Consultants: Business & advisory services	314	(70)	(200)	44	-	44	-	117	-					
Legal Services	-	-	-	-	-	-	-	-	-					
Contractors	289	-	(250)	39	-	39	-	-	-					
Agency and support/outsourced														
Services	2,423	(1,620)	(700)	103	49	54	47.9%	72	-					
Entertainment	794	(210)	(550)	34	2	32	6.3%	294	17					
Fleet services (Inc. Government motor transport)	-	-	-	-	-	-	-	-	-					
Inventory: Clothing, material & accessories	-	-	-	-	-	-	-	-	-					
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-					
Inventory: Material and Supplies	-	-	-	-	-	-	-	-	-					
Inventory: Medical Supplies	-	-	-	-	-	-	-	-	-					
Inventory: Other supplies	-	-	-	-	-	-	-	-	-					
Consumable supplies	227	17	(200)	44	27	17	61.4%	57	2					
Consumable: Stationery, printing and office supplies	39	(12)	-	27	16	11	57.7%	3	4					
Operating Leases	-	-	-	-	-	-	-	-	-					
Property payments	585	(10)	(550)	25	-	25	-	40	-					
Transport provided:														
Departmental activity	-	-	-	-	-	-	-	-	-					

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Economic classification												
Travel and subsistence	4,309	(340)	1,969	1,938	31	98.4%	401	1,333				
Training and development								523				
Operating payments	1,159	3,337	4,346	4,314	32	99.3%	266	475				
Venues and facilities	2,546	(1,027)	319	288	31	90.2%	54	96				
Rental and hiring	-	380	380	376	4	99.0%	-	243				
Transfers and subsidies	74,504	-	74,628	74,835	(207)	100.3%	61,771	62,231				
Departmental agencies and Accounts	16,670	-	16,670	42,026	(25,356)	252.1%	11,350	35,296				
Departmental agencies	16,670	-	16,670	42,026	(25,356)	252.1%	11,350	35,296				
Higher education Institutions	-	-	-	12,414	(12,414)	-	-	11,307				
Foreign governments and international organisations	-	-	-	2,000	(2,000)	-	-	-				
Public corporations and private enterprises	-	-	-	7,173	(7,173)	-	-	6,442				
Public corporation	-	-	-	6,440	(6,440)	-	-	3,178				
Other transfers to public Corporation	-	-	-	6,440	(6,440)	-	-	3,178				
Private enterprises	-	-	-	733	(733)	-	-	3,264				
Other transfers to private Enterprises	-	-	-	733	(733)	-	-	3,264				
Non-profit institution	57,834	-	57,834	10,890	46,944	18.8%	50,351	9,119				
Households	-	-	124	331	(207)	266.7%	70	67				
Social benefits	-	-	124	331	(207)	266.7%	70	67				
Other transfers to Households	-	-	124	331	(207)	266.7%	70	67				
Payment for capital assets	-	-	-	-	-	-	-	-				
Buildings and other fixed structures	-	-	-	-	-	-	-	-				
Machinery and equipment	-	-	-	-	-	-	-	-				
Transport equipment	-	-	-	-	-	-	-	-				

SCIENCE AND INNOVATION - VOTE 35
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Economic classification													
Other machinery and Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible -assets	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets												51	
Total	144,416		(8,140)	136,276	131,808	4,468	96.7%	119,302				114,229	

SCIENCE AND INNOVATION - VOTE 35
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Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
3.1: Multilateral Co-operation and Africa									
Current payments	18,789	-	(310)	18,479	17,941	538	97.1%	17,117	15,964
Compensation of employees	15,332	-	-	15,332	14,871	461	97.0%	16,120	15,245
Salaries and Wages	13,442	-	-	13,442	13,242	200	98.5%	14,157	13,532
Social contributions	1,890	-	-	1,890	1,629	261	86.2%	1,963	1,713
Goods and services	3,457	-	(310)	3,147	3,070	77	97.5%	997	719
Administrative fees	335	-	(310)	25	-	25	-	29	1
Advertising	-	-	-	-	-	-	-	5	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Catering: Departmental Activities	35	(30)	-	5	-	5	-	9	3
Communication (G&S)	486	-	-	486	472	14	97.0%	461	459
Computer services	-	-	-	-	-	-	-	39	-
Consultants: Business & advisory services	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	1,657	(1,600)	-	57	49	8	86.6%	-	-
Entertainment	8	-	-	8	-	8	-	1	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35

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Other transfers to households	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Total	29,282	(310)	28,972	28,477	495	98.3%	27,551	26,395						

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Sub-programme: 3.2 International Resources	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	19,741	-	(124)	19,617	17,507	2,110	89.2%	18,563	16,531
Compensation of employees	16,325	-	-	16,325	14,330	1,995	87.8%	17,157	14,599
Salaries and Wages	14,485	-	-	14,485	13,038	1,447	90.0%	15,271	13,361
Social contributions	1,840	-	-	1,840	1,292	548	70.2%	1,886	1,238
Goods and services	3,416	-	(124)	3,292	3,176	116	96.5%	1,406	1,932
Administrative fees	116	(100)	-	16	5	11	29.8%	117	7
Advertising	234	(48)	(124)	62	-	62	-	236	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	215	(210)	-	5	2	3	42.0%	217	421
Communication (G&S)	329	83	-	412	412	-	100.0%	294	8
Computer services	164	(140)	-	24	20	4	83.8%	165	-
Consultants: Business & advisory services	79	(70)	-	9	-	9	-	80	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outourced Services	25	(20)	-	5	-	5	-	25	-
Entertainment	220	(210)	-	10	2	8	21.4%	222	17
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

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Other transfers to private Enterprises	-	-	733	(733)	-	-	3,264
Non-profit institution	47,341	47,341	7,003	40,338	14.8%	40,000	5,136
Households	-	124	160	(36)	128.8%	-	-
Social benefits	-	124	160	(36)	128.8%	-	-
Other transfers to Households	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	38	38
Total	67,082	67,082	65,008	2,074	96.9%	58,601	57,667

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Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
3.3 Overseas Bilateral Cooperation									
Current payments	26,358	(2,072)	(6,780)	17,506	15,578	1,928	89.0%	15,624	13,678
Compensation of employees	18,583	(2,072)	(1,500)	15,011	13,303	1,708	88.6%	14,656	11,782
Salaries and Wages	16,885	(2,045)	(1,500)	13,340	12,076	1,264	90.5%	12,976	10,467
Social contributions	1,698	(27)	-	1,671	1,227	444	73.5%	1,680	1,315
Goods and services	7,775	-	(5,280)	2,495	2,275	220	91.2%	968	1,896
Administrative fees	19	-	-	19	1	18	3.8%	19	-
Advertising	81	(20)	(50)	11	-	11	-	10	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	95	-	(90)	5	3	2	67.1%	46	-
Communication (G&S)	972	-	(390)	582	579	3	99.5%	580	951
Computer services	-	20	-	20	19	1	93.6%	-	15
Consultants: Business & advisory services	235	-	(200)	35	-	35	-	37	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	741	-	(700)	41	-	41	-	47	-
Entertainment	564	-	(550)	14	-	14	-	69	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

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Sub-programme: 3.4 Office of the DDG: International Cooperation and Resources	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	5,024	2,072	(1,050)	6,046	5,948	98	98.4%	6,176	5,774
Compensation of employees	3,768	2,072	-	5,840	5,840	-	100.0%	5,872	5,689
Salaries and Wages	3,234	2,045	-	5,279	5,279	-	100.0%	5,277	5,141
Social contributions	534	27	-	561	561	-	100.0%	595	548
Goods and services	1,256	-	(1,050)	206	108	98	52.2%	304	85
Administrative fees	13	-	-	13	-	13	-	14	-
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	14	-	-	14	-	14	-	15	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	24	(20)	-	4	-	4	-	25	-
Communication (G&S)	87	20	-	107	107	0	99.6%	90	74
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	-	-	-	-	-	-	-	-	-
Scientific and technology	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	39	-	-	-
Contractors	289	-	(250)	39	-	-	-	-	-
Agency and support/outsourced Services	-	-	-	-	-	-	-	-	-
Entertainment	2	-	-	2	-	2	-	2	-

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Detail per programme 4 – Research Development and Support for the year ended 31 March 2022									
Sub-programme	2021/22					2020/21			
	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
4.1 Human Capital and Science Promotion	2,711,513	26	198	2,711,737	2,710,695	1,042	100.0%	2,306,016	2,305,758
4.2 Science Missions	184,941	1,194	1,387	187,522	186,692	830	99.6%	218,955	215,718
4.3 Basic Science and Infrastructure	1,041,773	327	75	1,042,175	1,041,969	206	100.0%	687,600	687,217
4.4 Astronomy	1,053,407	(1,047)	(1,651)	1,050,709	1,049,952	757	99.9%	520,334	520,185
4.5 Office of the DDG: Research Development and Support	3,998	(500)	(580)	2,918	2,135	783	73.2%	2,813	2,098
Total	4,995,632	-	(571)	4,995,061	4,991,443	3,618	99.9%	3,735,718	3,730,976
Economic Classification									
Current payments	51,823	-	(2,456)	49,367	47,362	2,005	95.9%	44,099	42,920
Compensation of employees	39,431	-	4,375	43,806	42,562	1,244	97.2%	40,770	40,590
Salaries and Wages	35,872	(694)	4,375	39,553	38,309	1,244	96.9%	36,560	36,415
Social contributions	3,559	694	-	4,253	4,253	-	100.0%	4,210	4,175
Goods and services	12,392	-	(6,831)	5,561	4,800	761	86.3%	3,329	2,330
Administrative fees	142	(31)	-	111	38	73	33.9%	77	3

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Advertising	32	-	32	-	32	-	32	-	32	-	6
Minor assets	-	-	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-	-	-
Activities	68	(12)	56	6	50	10.7%	50	240	254	10.7%	240
Communication (G&S)	1,847	(5)	1,048	933	115	89.0%	115	542	712	89.0%	542
Computer services	189	(39)	26	-	26	-	26	-	-	-	-
Consultants: Business & advisory services	2,890	-	1,610	1,514	96	94.0%	96	612	615	94.0%	612
Scientific and technology Services	-	-	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	1	-	-
Contractors	-	-	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-	-	-
Services	954	(42)	212	212	-	100.0%	-	49	56	100.0%	49
Entertainment	83	(23)	60	-	60	-	60	-	72	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-	-	-
Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-	-	-
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-	-	-
Inventory: Material and Supplies	-	-	-	-	-	-	-	-	-	-	-
Inventory: Other supplies	-	-	-	-	-	-	-	-	-	-	-
Consumable supplies	-	-	-	-	-	-	-	-	2	-	-
Consumable: Stationery, printing and office supplies	288	(72)	116	25	91	21.4%	91	5	5	21.4%	5
Operating Leases	-	-	-	-	-	-	-	-	-	-	-
Property payments	-	-	-	-	-	-	-	-	-	-	-

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Travel and subsistence	4,339	(93)	(2,500)	1,746	1,632	114	93.4%	1,370	743
Training and development	-	-	-	-	-	-	-	-	-
Operating payments	196	317	(47)	466	383	83	82.2%	61	55
Venues and facilities	1,364	-	(1,286)	78	58	20	74.1%	91	80
Rental and hiring	-	-	-	-	-	-	-	-	-
Transfers and subsidies	4,943,809	-	1,885	4,945,694	4,944,081	1,613	100.0%	3,691,609	3,688,046
Departmental agencies and Accounts	4,706,688	-	1,793	4,708,481	4,226,994	481,487	89.8%	3,631,189	3,202,382
Departmental agencies	4,706,688	-	1,793	4,708,481	4,226,994	481,487	89.8%	3,631,189	3,202,382
Higher education Institutions	-	-	-	-	154,490	(154,490)	-	-	-
Foreign governments and international organisations	-	-	-	-	-	-	-	-	-
Public corporation and private enterprise	237,121	-	-	237,121	402,200	(165,079)	169.6%	60,218	206,655
Public corporations	237,121	-	-	237,121	402,200	(165,079)	169.6%	60,218	204,655
Subsidies	-	-	-	-	-	-	-	-	-
Other transfers to public corporation	237,121	-	-	237,121	402,200	(165,079)	169.6%	60,218	204,655
Private enterprises	-	-	-	-	-	-	-	-	2,000
Other transfers to private Enterprises	-	-	-	-	-	-	-	-	2,000
Non-profit institution	-	-	-	-	160,305	(160,305)	-	-	158,472
Households	-	-	92	92	92	(0)	100.4%	202	243
Social benefit	-	-	92	92	92	(0)	100.4%	202	243
Other transfers to Households	-	-	32	32	32	(0)	101.1%	202	193
Payment for capital assets	-	-	60	60	60	-	100.0%	-	50
Buildings and other fixed structures	-	-	60	60	60	-	100.0%	-	50
Machinery and equipment	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-

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Other machinery and Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible -assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	4,995,632	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
Total	4,995,632	-	(571)	4,995,061	4,991,443	3,618	99.9%	3,735,718	3,730,976											

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Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
4.1: Human Capital and Science Promotion									
Current payments	14,019	26	106	14,151	14,151	-	100.0%	12,592	12,334
Compensation of employees	11,573	26	1,100	12,699	12,699	-	100.0%	11,867	11,808
Salaries and Wages	10,601	(222)	1,100	11,479	11,479	-	100.0%	10,689	10,649
Social contributions	972	248	-	1,220	1,220	-	100.0%	1,178	1,159
Goods and services	2,446	-	(994)	1,452	1,452	-	100.0%	725	526
Administrative fees	39	(32)	-	7	7	-	100.0%	9	1
Advertising	-	-	-	-	-	-	-	7	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	18	(16)	-	2	2	-	100.0%	241	233
Communication (G&S)	496	(40)	(194)	262	262	-	100.0%	151	-
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	954	(42)	(700)	212	212	-	100.0%	55	49
Entertainment	23	(23)	-	-	-	-	-	3	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-

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Households	-	92	92	92	(0)	100.4%	-	-
Social benefits	-	32	32	32	(0)	101.1%	-	-
Other transfers to Households	-	60	60	60	-	100.0%	-	-
Payment for capital assets	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-
Total	2,711,513	198	2,711,737	2,710,695	1,042	100.0%	2,306,016	2,305,758

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Sub-programme: 4.2: Science Mission	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	14,770	1,194	(406)	15,558	15,299	259	98.3%	14,044	14,011
Compensation of employees	11,443	1,194	1,500	14,137	14,137	-	100.0%	13,519	13,508
Salaries and Wages	10,180	1,135	1,500	12,815	12,815	-	100.0%	12,175	12,170
Social contributions	1,263	59	-	1,322	1,322	-	100.0%	1,344	1,338
Goods and services	3,327	-	(1,906)	1,421	1,162	259	81.8%	525	503
Administrative fees	59	-	-	59	26	33	43.9%	3	-
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	50	-	-	50	-	50	-	-	-
Communication (G&S)	349	-	-	349	318	31	91.1%	216	208
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	-	-	-	-	-	-	-	-	-
Entertainment	34	-	-	34	-	34	-	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-

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Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
4.3: Basic Science and Infrastructure									
Current payments	9,426	327	75	9,828	9,622	206	97.9%	9,495	9,471
Compensation of employees	7,304	327	1,775	9,406	9,406	-	100.0%	9,120	9,112
Salaries and Wages	6,532	58	1,775	8,365	8,365	-	100.0%	8,081	8,078
Social contributions	772	269	-	1,041	1,041	-	100.0%	1,039	1,034
Goods and services	2,122	-	(1,700)	422	216	206	51.3%	375	359
Administrative fees	-	1	-	1	1	-	100.0%	2	1
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental Activities	-	-	-	-	-	-	-	-	-
Communication (G&S)	842	-	(600)	242	183	59	75.6%	12	7
Computer services	-	-	-	-	-	-	-	195	193
Consultants: Business & advisory services	990	-	(900)	90	-	90	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	-	-	-	-	-	-	-	-	-
Entertainment	-	-	-	-	-	-	-	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

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Sub-programme: 4.4 Astronomy	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	9,610	(1,047)	(1,651)	6,912	6,155	757	89.0%	5,155	5,006
Compensation of employees	5,914	(1,047)	-	4,867	4,249	618	87.3%	4,226	4,162
Salaries and Wages	5,519	(1,104)	-	4,415	3,797	618	86.0%	3,794	3,735
Social contributions	395	57	-	452	452	-	100.0%	432	427
Goods and services	3,696	-	(1,651)	2,045	1,906	139	93.2%	929	844
Administrative fees	18	-	-	18	4	14	20.6%	1	-
Advertising	7	-	-	7	-	7	-	6	6
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	-	4	-	4	4	-	100.0%	1	-
Communication (G&S)	85	35	-	120	120	-	100.0%	97	88
Computer services	189	(39)	(124)	26	26	26	-	-	-
Consultants: Business & advisory services	1,900	-	(380)	1,520	1,514	6	99.6%	615	612
Scientific and technology	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	1	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	-	-	-	-	-	-	-	-	-
Entertainment	2	-	-	2	-	2	-	1	-
Fleet services (inc. government motor transport)	-	-	-	-	-	-	-	67	-
	-	-	-	-	-	-	-	-	-

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Other transfers to private enterprises	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-profit institution	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Households	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Social benefits	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1,053,407	(1,047)	(1,651)	1,050,709	1,049,952	757	99.9%	520,334	520,185	10	10	520,185	4,985	-	-	-	-	-	-	-

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Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
4.5 Office of the DDG: Research, Development and Support									
Current payments	3,998	(500)	(580)	2,918	2,135	783	73.2%	2,813	2,098
Compensation of employees	3,197	(500)	-	2,697	2,071	626	76.8%	2,038	2,000
Salaries and Wages	3,040	(561)	-	2,479	1,853	626	74.7%	1,821	1,783
Social contributions	157	61	-	218	218	-	100.0%	217	217
Goods and services	801	-	(580)	221	64	157	28.8%	775	98
Administrative fees	26	-	-	26	-	26	-	62	1
Advertising	25	-	-	25	-	25	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	-	-	-	-	-	-	-	-	-
Communication (G&S)	75	-	-	75	50	25	66.7%	53	53
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	-	-	-	-	-	-	-	-	-
Scientific and technology	-	-	-	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	-	-	-	-	-	24	-	-	-
Entertainment	24	-	-	24	-	-	-	2	-
Fleet services (inc. government motor transport)	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Detail per programme 5 – Socio –Economic Innovation Partnerships for the year ended 31 March 2022									
Sub-programme	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	2020/21	
								Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
5.1 Sector Innovation and Green Economy	1,120,460	(300)	-	1,120,160	1,117,731	2,429	99.8%	984,785	984,318
5.2 Innovation for Inclusive Development	403,889	(4,000)	-	399,889	399,215	674	99.8%	383,903	332,556
5.3 Science and Technology Investment	35,455	3,684	-	39,139	39,007	132	99.7%	31,139	30,664
5.4 Technology Localisation, Beneficiation and Advanced Manufacturing	259,386	(2,058)	(2,600)	254,728	251,799	2,929	98.9%	326,980	325,739
5.5 Office of the DDG: Socio Economic Innovation Partnership	6,386	2,674	(2,000)	7,060	6,973	87	98.8%	4,979	4,702
Total	1,825,577	-	(4,600)	1,820,977	1,814,725	6,252	99.7%	1,731,786	1,677,979

Economic Classification	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	2020/21	
								Final appropriation	Actual expenditure
	R'000	R'000	R'000	R'000	R'000	R'000	%	R'000	R'000
Current payments	57,907	-	(4,600)	53,307	49,129	4,178	92.2%	50,032	46,997
Compensation of employees	44,959	-	-	44,959	42,233	2,726	93.9%	44,805	42,191
Salaries and Wages	41,422	(967)	-	40,455	37,748	2,707	93.3%	39,557	37,614
Social contributions	3,537	967	-	4,504	4,485	19	99.6%	5,248	4,577

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

	12,948	-	(4,600)	8,348	6,896	1,452	82.6%	5,227	4,806
Goods and services	12,948	-	(4,600)	8,348	6,896	1,452	82.6%	5,227	4,806
Administrative fees	107	(5)	-	102	3	99	2.9%	10	2
Advertising	230	(130)	-	100	-	100	-	10	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	206	(83)	-	123	1	122	0.8%	12	-
Communication (G&S)	963	175	-	1,138	1,058	80	93.0%	2,381	2,363
Computer services	83	-	-	83	-	83	-	42	38
Consultants: Business & advisory services	7,816	(1,188)	(4,600)	2,028	1,824	204	89.9%	1,026	1,003
Legal Services	200	205	-	405	290	115	71.6%	308	304
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	49	1,860	-	1,909	1,856	53	97.2%	917	906
Entertainment	83	(40)	-	43	-	43	-	53	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing, material accessories	-	-	-	-	-	-	-	-	-
Inventory: Fuel, Oil and Gas	-	-	-	-	-	-	-	-	-
Inventory: Material and Supplies	-	-	-	-	-	-	-	-	-
Inventory: Other supplies	-	-	-	-	-	-	-	-	-
Consumable supplies	13	-	-	13	-	13	-	5	-
Consumable: Stationery, printing and office supplies	214	(122)	-	92	55	37	59.8%	25	22

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
 for the year ended 31 March 2022

Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible -assets	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-
Total	1,825,577	(4,600)	1,820,977	1,814,725	6,252	99.7%	1,731,786	1,677,979			

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
5.1: Sector Innovation and Green Economy									
Current payments	12,520	(300)	-	12,220	11,318	902	92.6%	10,342	9,875
Compensation of employees	8,809	1,100	-	9,909	9,882	27	99.7%	9,999	9,566
Salaries and Wages	8,020	800	-	8,820	8,804	16	99.8%	8,798	8,498
Social contributions	789	300	-	1,089	1,078	11	99.0%	1,201	1,068
Goods and services	3,711	(1,400)	-	2,311	1,436	875	62.1%	343	309
Administrative fees	72	-	-	72	-	72	-	3	-
Advertising	94	-	-	94	-	94	-	5	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	105	-	-	105	-	105	-	-	-
Communication (G&S)	396	(90)	-	306	302	4	98.7%	309	307
Computer services	83	-	-	83	-	83	-	4	-
Consultants: Business & advisory services	1,036	90	-	1,126	1,124	2	99.8%	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	49	-	-	49	-	49	-	-	-
Entertainment	23	-	-	23	-	23	-	3	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Sub-programme: 5.2: Innovation for Inclusive Development	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
Current payments	12,337	(4,000)	-	8,337	7,713	624	92.5%	9,580	8,831
Compensation of employees	11,612	(4,000)	-	7,612	7,081	532	93.0%	8,847	8,110
Salaries and Wages	11,071	(4,186)	-	6,885	6,354	532	92.3%	7,969	7,243
Social contributions	541	186	-	727	727	-	100.0%	878	867
Goods and services	725	-	-	725	632	93	87.2%	733	721
Administrative fees	-	5	-	5	3	2	60.0%	2	1
Advertising	-	-	-	-	-	-	-	1	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental Activities	-	2	-	2	1	1	50.0%	1	1
Communication (G&S)	35	160	-	195	191	4	97.9%	477	476
Computer services	-	-	-	-	-	-	-	38	38
Consultants: Business & advisory services	500	(428)	-	72	72	72	-	1	1
Legal Services	100	125	-	225	219	6	97.4%	115	113
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	-	-	-	-	-	-	-	8	-
Entertainment	-	-	-	-	-	-	-	1	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
5.3: Science and Technology Investment									
Current payments	9,484	3,684	-	13,168	13,036	132	99.0%	13,655	13,180
Compensation of employees	7,798	2,284	-	10,082	10,082	-	100.0%	10,261	9,892
Salaries and Wages	6,919	2,150	-	9,069	9,069	-	100.0%	9,144	8,859
Social contributions	879	134	-	1,013	1,013	-	100.0%	1,117	1,033
Goods and services	1,686	1,400	-	3,086	2,954	132	95.7%	3,394	3,288
Administrative fees	22	(130)	-	22	-	22	-	3	1
Advertising	136	-	-	6	-	6	-	4	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	86	(80)	-	6	-	6	-	7	-
Activities	335	-	-	335	268	67	80.0%	1,134	1,130
Communication (G&S)	-	-	-	-	-	-	-	-	-
Computer services	455	250	-	705	700	5	99.3%	1,005	1,003
Consultants: Business & advisory services	-	80	-	80	71	9	88.3%	193	191
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	-	1,860	-	1,860	1,856	4	99.8%	909	906
Entertainment	44	(40)	-	4	-	4	-	44	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-
Inventory: Clothing & Accessories	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Non-profit institution	-	-	-	-	-	-	-	-	-	-	-	-	-
Households	-	-	-	-	-	-	-	-	-	-	-	-	-
Social benefit	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to households	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	35,455	3,684	-	39,139	39,007	132	99.7%	31,139	30,664				

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
5.4: Technology Localisation, Beneficiation and Advanced Manufacturing									
Current payments	17,179	(2,058)	(2,600)	12,521	10,089	2,432	80.6%	11,476	10,409
Compensation of employees	14,076	(2,058)	-	12,018	9,851	2,167	82.0%	11,148	10,177
Salaries and Wages	13,100	(2,128)	-	10,972	8,813	2,159	80.3%	9,596	9,063
Social contributions	976	70	-	1,046	1,039	7	99.3%	1,552	1,114
Goods and services	3,103	-	(2,600)	503	238	265	47.3%	328	232
Administrative fees	-	-	-	-	-	-	-	-	-
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	-	-	-	-	-	-	-	-	-
Communication (G&S)	84	100	-	184	181	3	98.3%	230	226
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	2,825	(100)	(2,600)	125	-	125	-	20	-
Legal Services	100	-	-	100	-	100	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced	-	-	-	-	-	-	-	-	-
Services	-	-	-	-	-	-	-	-	-
Entertainment	-	-	-	-	-	-	-	5	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Sub-programme:	Adjusted appropriation	Shifting of funds	Virement	Final appropriation	Actual expenditure	Variance	Expenditure as % of final appropriation	Final appropriation	Actual expenditure
5.5 Office of the DDG: Socio Economic Innovation Partnership									
Current payments	6,386	2,674	(2,000)	7,060	6,973	87	98.8%	4,979	4,702
Compensation of employees	2,663	2,674	-	5,337	5,337	-	100.0%	4,550	4,446
Salaries and Wages	2,311	2,397	-	4,708	4,708	-	100.0%	4,050	3,951
Social contributions	352	277	-	629	629	-	100.0%	500	495
Goods and services	3,723	-	(2,000)	1,723	1,636	87	95.0%	429	256
Administrative fees	13	(10)	-	3	-	3	-	2	-
Advertising	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-
Catering: Departmental	-	-	-	-	-	-	-	-	-
Activities	15	(5)	-	10	-	10	-	2	-
Communication (G&S)	113	5	-	118	116	2	98.4%	231	224
Computer services	-	-	-	-	-	-	-	-	-
Consultants: Business & advisory services	3,000	(1,000)	(2,000)	-	-	-	-	-	-
Legal Services	-	-	-	-	-	-	-	-	-
Contractors	-	-	-	-	-	-	-	-	-
Agency and support/outsourced Services	-	-	-	-	-	-	-	-	-
Entertainment	16	-	-	16	-	16	-	-	-
Fleet services (Inc. government motor transport)	-	-	-	-	-	-	-	-	-

SCIENCE AND INNOVATION - VOTE 35
Appropriation Statement
for the year ended 31 March 2022

Non-profit institution	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Households	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Social benefits	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other transfers to Households	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for capital assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Buildings and other fixed structures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other machinery and equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Software and other intangible assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Payment for financial assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	6,386	2,674	(2,000)	7,060	6,973	87	98.8%	4,979	4,702												

SCIENCE AND INNOVATION - VOTE 35
Notes to the Appropriation Statement
for the year ended 31 March 2022

1. Details of transfers and subsidies as per Appropriation Act (after virement):

Details of these transactions can be viewed in the note to the Transfers and Subsidies, disclosure notes and Annexure 1 (B, C, E, D, F and G) to the Annual Financial Statements.

2. Details of specifically and exclusively appropriated amounts voted (after virement):

Details of these transactions can be viewed in note 1 (Annual Appropriation) to the Annual Financial Statements.

3. Details on payments for financial assets.

The details of these transactions can be viewed in note 7 to the Annual Financial Statements.

4. Explanations of material variances from amounts voted (after virement):

4.1 Per programme:	Final appropriation	Actual expenditure	Variance R'000	Variance as a % of final appropriation
	R'000	R'000	R'000	%
Programme name				
Administration	328,308	304,453	23,855	7.30%

The variances are due to delays in filling prioritised positions

4.2 Per economic classification	Final appropriation	Actual expenditure	Variance	Variance as a % of final appropriation
	R'000	R'000	R'000	%
Current payments				
Compensation of employees	363,326	332,788	30,538	8.40%
Goods and services	158,556	152,834	5,722	3.60%
Interest and rent on land				
Transfers and subsidies				
Departmental agencies and accounts	6,522,705	6,017,023	505,682	7.80%
Higher education Institutions	-	240,526	(240,526)	-
Public corporations and private enterprises	1,512,323	1,957,503	(445,180)	(29.4)%
Foreign governments and international organisations	-	2,000	(2,000)	-
Non-profit institutions	435,325	249,245	186,080	42.70%
Households	572	1,130	(558)	97.50%

SCIENCE AND INNOVATION - VOTE 35
Notes to the Appropriation Statement
 for the year ended 31 March 2022

Payments for capital assets				
Machinery and equipment	12,731	8,941	3,790	29.80%
Payments for financial assets	100	92	8	8.00%

The variance is due to delays in filling of vacant positions and the finalising the procurement for Laptops and Ipads

SCIENCE AND INNOVATION - VOTE 35
Statement of Financial Performance
for the year ended 31 March 2022

PERFORMANCE	Note	2021/22 R'000	2020/21 R'000
REVENUE			
Annual appropriation	1	9,005,638	7,278,287
Departmental revenue	2	1,090	2,241
Aid assistance	3	69,822	69,552
TOTAL REVENUE		9,076,550	7,350,080
EXPENDITURE			
Current expenditure			
Compensation of employees	4	332,751	321,938
Goods and services	5	152,832	107,016
Aid assistance	3	1,527	250
Total current expenditure		487,110	429,204
Transfers and subsidies			
Transfers and subsidies	7	8,467,427	6,729,702
Aid assistance	3	58,428	68,881
Total transfers and subsidies		8,525,855	6,798,583
Expenditure for capital assets			
Tangible capital assets	8	8,941	6,062
Intangible assets	8		
Total expenditure for capital assets		8,941	6,062
Unauthorised expenditure approved without funding			
Payment for financial assets	6	92	547
TOTAL EXPENDITURE		9,021,998	7,234,396
SURPLUS FOR THE YEAR		54,552	115,684
Reconciliation of net surplus for the year			
Voted funds		43,595	113,022
Departmental revenue	14	1,090	2,241
Aid assistance	3	9,867	421
SURPLUS FOR THE YEAR		54,552	115,684

SCIENCE AND INNOVATION - VOTE 35
Statement of Financial Position
for the year ended 31 March 2022

POSITION	Note	2021/22	2020/21
		R'000	R'000
ASSETS			
Current assets		53,824	113,872
Cash and cash equivalents	<u>9</u>	41,779	105,361
Prepayments and advances	<u>10</u>	10,138	6,000
Receivables	<u>11</u>	1,907	2,511
Non-Current Assets		194	143
Receivables	<u>11</u>	194	143
TOTAL ASSETS		54,018	114,015
LIABILITIES			
Current liabilities		53,542	113,506
Voted funds to be surrendered to the Revenue Fund	<u>13</u>	43,595	113,022
Departmental revenue to be surrendered to the Revenue Fund	<u>14</u>	15	27
Payables	<u>15</u>	65	36
Aid assistance repayable	<u>3</u>	9,867	421
TOTAL LIABILITIES		53,542	113,506
NET ASSETS		476	509
Represented by:			
Recoverable revenue		476	509
TOTAL		476	509

SCIENCE AND INNOVATION - VOTE 35
Statement of Changes in Net Assets
for the year ended 31 March 2022

NET ASSETS	<i>Note</i>	2021/22	2020/21
		R'000	R'000
Recoverable revenue			
Opening balance		509	104
Transfers:		-33	405
Debts revised		-	-
Debts recovered (included in departmental receipts)		-87	(75)
Debts raised		54	480
Closing balance		476	509
TOTAL		476	509

SCIENCE AND INNOVATION - VOTE 35

Cash Flow Statement

for the year ended 31 March 2022

CASH FLOW	Note	2021/22 R'000	2020/21 R'000
CASH FLOWS FROM OPERATING ACTIVITIES			
Receipts		9,076,315	7,350,080
Annual appropriated funds received	<u>1.1</u>	9,005,638	7,278,287
Departmental revenue received	<u>2</u>	818	2,228
Interest received	<u>2.2</u>	37	13
Aid assistance received	<u>3</u>	69,822	69,552
Net (increase) decrease in working capital		(3,505)	(5,818)
Surrendered to Revenue Fund		(114,124)	(75,906)
Surrendered to RDP Fund/Donor		(421)	-
Current payments		(487,110)	(429,204)
Interest paid		-	-
Payments for financial assets		(92)	(547)
Transfers and subsidies paid		(8,525,855)	(6,798,583)
Net cash flow available from operating activities	<u>16</u>	(54,792)	40,022
CASH FLOWS FROM INVESTING ACTIVITIES			
Payments for capital assets	<u>8</u>	(8,941)	(6,062)
Proceeds from sale of capital assets	<u>2.3</u>	235	-
Increase in non-current-current receivables		(51)	48
Net cash flows from investing activities		(8,757)	(6,014)
CASH FLOWS FROM FINANCING ACTIVITIES			
Increase/(decrease) in net assets		(33)	405
Net cash flows from financing activities		(33)	405
Net increase/(decrease) in cash and cash equivalents		(63,582)	34,413
Cash and cash equivalents at the beginning of the period		105,361	70,948
Cash and cash equivalents at end of period	<u>17</u>	41,779	105,361

SCIENCE AND INNOVATION - VOTE 35**Accounting Policies**
for the year ended 31 March 2022

The Financial Statements have been prepared in accordance with the following policies, indicated below which have been applied consistently in all material aspects, unless otherwise indicated. Management has concluded that the financial statements present fairly the department's primary and secondary information.

The historical cost convention has been used, except where otherwise indicated. Management has used assessments and estimates in preparing the annual financial statements where necessary. These are based on the best information available at the time of preparation.

Where appropriate and meaningful, additional information has been disclosed to enhance the usefulness of the Financial Statements and to comply with the statutory requirements of the Public Finance Management Act, Act 1 of 1999 (as amended by Act 29 of 1999), and the Treasury Regulations issued in terms of the Act and the Division of Revenue Act.

1. Basis of preparation

The Financial Statements have been prepared in accordance with the Modified Cash Standard.

2. Going concern

The financial statements have been prepared on a going concern basis due to the following reasons amongst others:

- (i) The department was allocated a budget over the Medium-Term Expenditure Framework period that includes R 8 billion that was allocated for the next financial year for its operations. This budget will assist in paying for short term financial obligations such as personnel and other priority projects.
- (ii) The Department's five-year (2020-2025) strategic plan is still on going. The plan is being implemented and will only be reviewed after 5 years.

3. Presentation currency

All amounts have been presented in South African Rand (R), which is also the functional currency of the Department.

4. Rounding

Unless otherwise stated financial figures have been rounded to the nearest one thousand Rand (R'000).

SCIENCE AND INNOVATION - VOTE 35

Accounting Policies for the year ended 31 March 2022

5. Foreign currency translation

Cash flows arising from foreign currency transactions are translated into South African Rands using the spot exchange rates prevailing at the date of payment/receipt.

6. Comparative information

6.1 Prior period comparative information

Prior period comparative information has been presented in the current year's financial statements. Where necessary figures included in the prior period financial statements have been reclassified to ensure that, the format in which the information is presented is consistent with the format of the current year's financial statements.

6.2 Current year comparison with budget

A comparison between the approved, final budget and actual amounts for each programme and economic classification is included in the appropriation statement

7 Revenue

7.1 Appropriated funds

Appropriated funds comprise of departmental allocations. Appropriated funds are recognised in the statement of financial performance on the date the appropriation becomes effective. Adjustments to the appropriated funds made in terms of the adjustments budget process are recognised in the statement of financial performance on the date the adjustments become effective.

The net amount of any appropriated funds due to or from the National Revenue Fund at the reporting date is recognised as payable or receivable in the Statement of Financial Position.

7.2 Departmental revenue

The departmental revenue is recognised in the Statement of Financial Performance when received and is subsequently paid into the National Revenue Fund, unless otherwise stated. Any amount owing to the National Revenue Fund at the reporting date is recognised as payable in the Statement of Financial Position.

SCIENCE AND INNOVATION - VOTE 35**Accounting Policies**
for the year ended 31 March 2022**7.3 Accrued departmental revenue**

Accruals in respect of departmental revenue (excluding tax revenue) are recorded in the notes to the financial statements when:

- It is probable that the economic benefits or service potential associated with the transaction will flow to the Department, and
- The amount of revenue can be measured reliably.

The accrued revenue is measured at the fair value of the consideration receivable. Write-offs if any are made according to the department's debt write-off policy

8. Expenditure**8.1 Compensation of employees****8.1.1 Salaries and wages**

Salaries and wages are recognised in the Statement of Financial Performance on the date of payment.

8.1.2 Social contributions

Social contributions made by the Department in respect of current employees are recognised in the Statement of Financial Performance on the date of payment. Social contributions made by the Department in respect of ex-employees are classified as transfers to households in the Statement of Financial Performance on the date of payment

8.2. Other expenditure

Other expenditure such as goods and services, transfers and subsidies and payments for capital assets are recognised in the Statement of Financial Performance on the date of payment. The expense is classified as a capital expense if the total consideration paid is more than the capitalisation threshold

8.3 Accruals and payables not recognised

Accruals and payables not recognised are recorded in the notes to the financial statements when the goods are received or in the case of services, when they are rendered to the department or in the case of transfers and subsidies when they are due and payable. Accruals and payables not recognised are measured at cost.

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Accounting Policies for the year ended 31 March 2022

Leases

8.3.1 Operating lease

Operating lease payments made during the reporting period are recognised as current expenditure in the Statement of Financial Performance on the date of payment. The operating lease commitments are recorded in the notes to the financial statements.

8.3.2 Finance leases

Finance lease payments made during the reporting period are recognised as capital expenditure in the Statement of Financial Performance on the date of payment. The finance lease commitments are recorded in the notes to the financial statements and are not apportioned between the capital and interest portions.

Finance lease acquired at the end of the lease term are recorded and measured at the lower of:

- Cost, being the fair value of the asset, or
- The sum of the minimum lease payments made, including any payments made to acquire ownership at the end of the lease term, excluding interest.

9 Aid Assistance

9.1 Aid assistance received

Aid assistance received in cash is recognised in the statement of financial performance when received. In-kind aid assistance is recorded in the notes to the financial statements on the date of receipt and is measured at fair value.

Aid assistance not spent for the intended purpose and any unutilised funds from aid assistance that are required to be refunded to the donor are recognised as a payable in the statement of financial position.

9.2 Aid assistance paid

Aid assistance paid is recognised in the Statement of Financial Performance on the date of payment. Aid assistance payments made prior to the receipt of funds are recognised as a receivable in the Statement of Financial Position.

SCIENCE AND INNOVATION - VOTE 35**Accounting Policies**
for the year ended 31 March 2022**10 Cash and cash equivalents**

Cash and cash equivalents are stated at cost in the Statement of Financial Position. Bank overdrafts are shown separately on the face of the Statement of Financial Position. For the purposes of the Cash Flow Statement, cash and cash equivalents comprise cash on hand, deposits held, other short-term highly liquid investments and bank overdrafts.

11 Prepayments and advances

Prepayments and advances are recognised in the statement of financial position when the department receives or disburses the cash. Prepayments and advances are initially and subsequently measured at cost.

12. Loans and receivables

Loans and receivables are recognised in the statement of financial position at cost plus accrued interest, where interest is charged, less amounts already settled or written-off. Write-offs are made according to the department's write-off policy

13. Investments

Investments are recognised in the Statement of Financial position at cost.

14. Financial assets**14.1 Financial assets (not covered elsewhere)**

A financial asset is recognised initially at its cost plus transaction costs that are directly attributable to the acquisition or issue of the financial assets. At the reporting date, a department shall measure its financial assets at cost, less amounts already settled or written-off, except for recognised loans and receivables, which are measured at cost plus accrued interest, where interest is charged, less amounts already settled or written-off.

14.2 Impairment of Financial assets

Where there is an indication of impairment of a financial asset, an estimation of the reduction in the recorded carrying value, to reflect the best estimate of the amount of the future economic benefits expected to be recovered from that asset is recorded in the notes to the financial statements

SCIENCE AND INNOVATION - VOTE 35

Accounting Policies for the year ended 31 March 2022

15 Payables

Payables are recognised in the Statement of Financial Position at cost.

16 Capital Assets

16.1 Immovable capital assets

Immovable capital assets are reflected in the asset register of the department and recorded in the notes to the financial statements at cost or fair value where the cost cannot be determined reliably. Immovable capital assets acquired in a non-exchange transaction are recorded at fair value at the date of acquisition. Immovable assets are subsequently carried in the asset register at cost and are not currently subject to depreciation or impairment.

Subsequent expenditure of a capital nature forms part of the cost of the existing asset when ready for use.

Additional information on immovable assets not reflected in the asset register is provided in the notes to financial statements.

16.2 Movable capital assets

Movable capital assets are initially recorded in the notes to the financial statements at cost. Movable capital assets acquired through a non-exchange transaction are measured at fair value as at the date of acquisition.

Where the cost of movable capital assets cannot be determined reliably, the movable capital assets are measured at fair value and where fair value cannot be determined; the movable assets are measured at R1.

All assets acquired prior to 1 April 2002 (or late as approved by the Office of the Accountant General) are measured at R1.

Movable capital assets are subsequently carried at cost and are not subject to depreciation or impairment.

Subsequent expenditure that is of capital nature is added to the cost of the asset at the end of the capital project unless the movable asset is recorded by another department in which case the completed project costs are transferred to the department.

SCIENCE AND INNOVATION - VOTE 35**Accounting Policies**
for the year ended 31 March 2022**16.3 Intangible assets**

Intangible assets are initially recorded in the notes to the financial statements at cost. Intangible assets acquired through a non-exchange transaction are measured at fair value as at the date of acquisition.

Internally generated intangible assets are recorded in the notes to the financial statements when the department commences the development phase of the project.

Where the cost of intangible assets cannot be determined reliably, the intangible capital assets are measured at fair value and where fair value cannot be determined; the intangible assets are measured at R1. All assets acquired prior to 1 April 2002 (or a later date as approved by the OAG) are recorded at R1. Intangible assets are subsequently carried at cost and are not subject to depreciation or impairment.

Subsequent expenditure that is of a capital nature is added to the cost of the asset at the end of the capital project unless the intangible asset is recorded by another department/entity in which case the completed project costs are transferred to that department.

16.4 Project Costs: Work in progress

Expenditure of a capital nature is initially recognised in the statement of financial performance at cost when paid. Amounts paid towards capital projects are separated from the amounts recognised and accumulated in work-in progress until the underlying assets is ready for use. Once ready for use, the total accumulated payments are recorded in an assets register. Subsequent payments to complete the project are added to the capital asset in the asset register. Where the department is not the custodian of the completed project asset, the asset is transferred to the custodian subsequent to completion.

17 Provisions and Contingencies**17.1 Provisions**

Provisions are recorded in the notes to the financial statements when there is a present legal or constructive obligation to forfeit economic benefits as a result of events in the past and it is probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation and a reliable estimate of the obligation can be made. The provision is measured as the best estimate of the funds required to settle the present obligation at the reporting date

SCIENCE AND INNOVATION - VOTE 35

Accounting Policies for the year ended 31 March 2022

17.2 Contingent liabilities

Contingent liabilities are recorded in the notes to the financial statements when there is a possible obligation that arises from past events, and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not within the control of the department or when there is a present obligation that is not recognised because it is not probable that an outflow of resources will be required to settle the obligation or the amount of the obligation cannot be measured reliably.

17.3 Contingent assets

Contingent assets are recorded in the notes to the financial statements when a possible asset arises from past events, and whose existence will be confirmed by the occurrence or non-occurrence of one or more uncertain future events not within the control of the department.

17.4 Capital Commitments

Capital commitments are recorded at cost in the notes to the financial statements when there is a contractual arrangement or an approval by management in a manner that raises a valid expectation that the department will discharge its responsibilities thereby incurring future expenditure that will result in the outflow of cash.

18 Unauthorised expenditure

Unauthorised expenditure is recognised in the statement of financial position until such time as the expenditure is either:

- approved by Parliament with funding and the related funds are received; or
- approved by Parliament without funding and is written off against the appropriation in the statement of financial performance; or
- transferred to receivables for recovery.

Unauthorised expenditure is measured at the amount of the confirmed unauthorised expenditure.

SCIENCE AND INNOVATION - VOTE 35**Accounting Policies**
for the year ended 31 March 2022**19. Fruitless and wasteful expenditure**

Fruitless and wasteful expenditure is recorded in the notes to the financial statements when confirmed. The amount recorded is equal to the total value of the fruitless and or wasteful expenditure incurred.

Fruitless and wasteful expenditure is removed from the notes to the financial statements when it is resolved or transferred to receivables for recovery. Fruitless and wasteful expenditure receivables are measured at the amount that is expected to be recoverable and are de-recognised when settled or subsequently written-off as irrecoverable.

20. Irregular expenditure

Irregular expenditure is recorded in the notes to the financial statements when confirmed after its assessment. The amount recorded is equal to the value of the irregular expenditure incurred unless it is impracticable to determine, in which case reasons therefore are provided in the note.

Irregular expenditure is reduced from the note when it is either condoned by the relevant authority, transferred to receivables for recovery or not condoned and removed or written-off.

Irregular expenditure receivables are measured at the amount that is expected to be recoverable and are de-recognised when settled or subsequently written-off as irrecoverable.

21. Changes in accounting estimates

Changes in accounting estimates that are effected by management have been applied retrospectively in accordance with MCS requirements, except to the extent that it is impracticable to determine the period-specific effects or the cumulative effect of the change in policy. In such instances the department shall restate the opening balances of assets, liabilities and net assets for the earliest period for which retrospective restatement is practicable.

SCIENCE AND INNOVATION - VOTE 35

Accounting Policies for the year ended 31 March 2022

Changes in accounting estimates are applied prospectively in accordance with MCS requirements.

Correction of errors is applied retrospectively in the period in which the error has occurred in accordance with MCS requirements, except to the extent that it is impracticable to determine the period-specific effects or the cumulative effect of the error. In such cases the department shall restate the opening balances of assets, liabilities and net assets for the earliest period for which retrospective restatement is practicable.

22 Events after the reporting date

Events after the reporting date that are classified as adjusting events are accounted for in the financial statements, if occurred. The events after the reporting date that are classified as non-adjusting events after the reporting date are disclosed in the notes to the financial statements, if occurred.

23 Agent – Principal arrangements

The department is party to a principal-agent arrangement with the department of Justice and Constitutional Development. In terms of the arrangement of a principal-agent, all related revenues, expenditures, assets and liabilities have to be recognised or recorded in terms of the relevant policies listed herein. Additional disclosures have to be provided in the notes to the financial statements where appropriate.

24 Departures from the MCS requirements

Management has concluded that the financial statements present fairly the department's primary and secondary information; that the department complied with the Standard and that there was no departure from any particular requirement to achieve fair presentation.

25 Capitalisation reserve

The capitalisation reserve comprises of financial assets and/or liabilities originating in a prior reporting period but which are recognised in the statement of financial position for the first time in the current reporting period. Amounts are recognised in the capitalisation reserves when identified in the current period and are transferred to the National Revenue Fund when the underlying asset is disposed and the related funds are received.

SCIENCE AND INNOVATION - VOTE 35

Accounting Policies
for the year ended 31 March 2022**26 Recoverable revenue**

Amounts are recognised as recoverable revenue when a payment made in a previous financial year becomes recoverable from a debtor in the current financial year. Amounts are either transferred to the National Revenue Fund when recovered or are transferred to the statement of financial performance when written-off.

27 Related party transactions

A related party transaction is a transfer of resources, services or obligations between the reporting entity and a related party. Related party transactions within the Minister's portfolio are recorded in the notes to the financial statements when the transaction is not at arm's length.

Key management personnel are those persons having the authority and responsibility for planning, directing and controlling the activities of the department. The number of individuals and their full compensation is recorded in the notes to the financial statements

28 Inventories

At the date of acquisition, inventories are recorded at cost price in the statement of financial performance. Where inventories are acquired as part of a non-exchange transaction, the cost of inventory is its fair value at the date of acquisition. Inventories are subsequently measured at the lower of cost and net realisable value or the lower of cost and current replacement value (the factors which could lead to the revaluation of inventory includes but not limited to obsolesce, defects, over-supply and major price declines). Subsequent measurement of the cost of inventory is determined on the weighted average basis. The department is not an inventory institution therefore the note on inventory is not applicable

29 Public-Private Partnerships

Public Private Partnership (PPP) are accounted for based on the nature and/or the substance of the partnership. The transaction is accounted for in accordance with the relevant accounting policies. The summary of the significant terms of the PPP agreement, the parties to the agreement, and the date of commencement thereof together with the description and nature of the concession fees received, the unitary fees

SCIENCE AND INNOVATION - VOTE 35

Accounting Policies for the year ended 31 March 2022

paid, rights and obligations of the department are recorded in the notes to the financial statements. The department is not a party to any Public Private Partnership.

30 Employee Benefits

The value of each major class of employee benefit obligation (accruals, payables not recognised and provisions) is disclosed in the Employee benefits note.

31 Transfer of functions

Transfer of functions are accounted for by the acquirer by recognising or recording assets acquired and liabilities assumed at their carrying amounts at the date of transfer. Transfer of functions are accounted for by the transferor by derecognising or removing assets and liabilities at their carrying amounts at the date of transfers.

32 Mergers

Mergers are accounted for by the combined department by recognised or recording assets acquired and liabilities assumed at their carrying amounts at the date of the merger.

Mergers are accounted for by the combining departments by derecognising or removing assets and liabilities at their carrying amounts at the date of the merger.

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Notes to the Annual Financial Statements
for the year ended 31 March 2022

1. Annual appropriation**1.1 Annual appropriation**

Included are funds appropriated in terms of the Appropriation Act (and the Adjustments Appropriation Act) for National Departments (Voted funds):

	Final appropriation 2021/2022	Actual funds received 2021/2022	Funds not requested /not received 2021/2022	Final appropriation 2020/2021	Actual funds received 2020/2021	Funds not requested /not received 2020/2021
	R'000	R'000	R'000	R'000	R'000	R'000
Administration	334,724	334,724	-	304,107	304,107	-
Technology Innovation	1,705,289	1,705,289	-	1,378,321	1,378,321	-
International Cooperation and Resources	144,416	144,416	-	116,802	116,802	-
Research, Development and Support	4,995,632	4,995,632	-	3,745,248	3,745,248	-
Socio-Economic Innovation Partnerships	1,825,577	1,825,577	-	1,733,809	1,733,809	-
Total	9,005,638	9,005,638	-	7,278,287	7,278,287	-

The Final Appropriation amount disclosed is based on the approved adjusted budget.

2. Departmental revenue

	Note	2021/22 R'000	2020/21 R'000
Sales of goods and services other than capital assets	<u>2.1</u>	73	71
Interest, dividends and rent on land	<u>2.2</u>	37	13
Sale of capital assets	<u>2.3</u>	235	-
Transactions in financial assets and liabilities	<u>2.4</u>	745	2,157
Departmental revenue collected		1,090	2,241

SCIENCE AND INNOVATION - VOTE 35
Notes to the Annual Financial Statements
for the year ended 31 March 2022

2.1 Sales of goods and services other than capital assets

	Note <u>2</u>	2021/22 R'000	2020/21 R'000
Other sales		69	69
Sales of scrap, waste and other used current goods		4	2
Total		73	71

2.2 Interest, dividends and rent on land

	Note <u>2</u>	2021/22 R'000	2020/21 R'000
Interest		37	13
Total		37	13

2.3 Sale of capital assets

	Note <u>2</u>	2021/22 R'000	2020/21 R'000
Machinery and equipment		235	-
Total		235	-

2.4 Transactions in financial assets and liabilities

	Note <u>2</u>	2021/22 R'000	2020/21 R'000
Other receipts, including recoverable revenue		745	2,157
Total		745	2,157

3. Aid assistance**3.1 Aid assistance received in cash from RDP**

	Note <u>3</u>	2021/22 R'000	2020/21 R'000
Foreign			
Opening balance			-
Prior year error		421	-
As restated		421	-
Transferred from Statement of Financial Performance		9,867	421
Paid during the year		(421)	-
Closing balance		9,867	421

SCIENCE AND INNOVATION - VOTE 35
Notes to the Annual Financial Statements
for the year ended 31 March 2022

3.2 Analysis of balance by source

	<i>Note</i>		
Aid assistance from RDP	<u>3</u>		-
RDP Fund		9,867	421
Closing balance		9,867	421

3.3 Analysis of balance

	<i>Note</i>		
Aid assistance repayable	<u>3</u>	9,867	421
Closing balance		9,867	421

3.4 Aid assistance expenditure per economic classification

	<i>Note</i>		
Current	<u>3</u>	1,527	250
Capital			-
Transfers and subsidies		58,428	68,881
Closing balance		59,955	69,131

The analysis on sub-note 3.4 was introduced in 2020/21 to indicate the allocation of donor funds expenditure during the financial year.

4. Compensation of employees**4.1 Salaries and wages**

	<i>Note</i>	2021/22	2020/21
	<u>4</u>	R'000	R'000
Basic salary		216,060	214,313
Performance award		3,527	3,178
Service-based		510	22
Compensative/circumstantial		4,162	3,803
Periodic payments		-	-
Other non-pensionable allowances		73,800	66,425
Total		298,059	287,741

SCIENCE AND INNOVATION - VOTE 35
Notes to the Annual Financial Statements
for the year ended 31 March 2022

4.2 Social contributions

	Note	2021/22	2020/21
	<u>4</u>	R'000	R'000
Employer contributions			
Pension		27,421	27,315
Medical		7,230	6,842
Bargaining council		41	40
Total		<u>34,692</u>	<u>34,197</u>
Total compensation of employees		<u>332,751</u>	<u>321,938</u>
Average number of employees		<u>374</u>	<u>383</u>

5. Goods and services

	Note	2021/22	2020/21
		R'000	R'000
Administrative fees		230	95
Advertising		21,341	4,261
Minor assets	<u>5.1</u>	41	282
Bursaries (employees)		1,397	469
Catering		111	49
Communication		10,929	12,793
Computer services	<u>5.2</u>	28,621	25,577
Consultants: Business and advisory services		13,945	10,359
Legal Services		720	814
Contractors		982	1,672
Agency and support/outsourced services		14,239	10,242
Entertainment		40	30
Audit cost – external	<u>5.3</u>	5,380	4,219
Fleet services		987	777
Consumables	<u>5.4</u>	3,404	2,874
Operating leases		6,381	4,129
Property payments	<u>5.5</u>	16,226	13,306
Rental and Hiring		516	331
Travel and subsistence	<u>5.6</u>	16,317	7,414
Venues and facilities		2,308	1,456
Training and development		1,489	1,558
Other operating expenditure	<u>5.7</u>	9,928	4,309
Total		<u>152,832</u>	<u>107,016</u>

The increase is due to resumption of activities that were stopped due to Covid 19 such as travel.

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Notes to the Annual Financial Statements
for the year ended 31 March 2022

5.1 Minor assets

	Note <u>5</u>	2021/22 R'000	2020/21 R'000
Tangible assets		41	282
Machinery and equipment		41	282
Intangible assets			
Total		41	282

5.2 Computer services

	Note <u>5</u>	2021/22 R'000	2020/21 R'000
SITA computer services		14,132	7,846
External computer service providers		14,489	17,731
Total		28,621	25,577

5.3 Audit cost – External

	Note <u>5</u>	2021/22 R'000	2020/21 R'000
Regularity audits		5,380	4,219
Total		5,380	4,219

5.4 Consumables

	Note <u>5</u>	2021/22 R'000	2020/21 R'000
Consumables supplies		1,834	1,231
Uniform and clothing		32	162
Household supplies		246	276
Communication accessories		1,402	1
IT consumables		131	702
Other consumables		23	90
Stationery, printing and office supplies		1,570	1,643
Total		3,404	2,874

5.5 Property payments

	Note <u>5</u>	2021/22 R'000	2020/21 R'000
Municipal services		5,617	2,705
Property management fees		2,394	4,127
Other		8,215	6,474
Total		16,226	13,306

SCIENCE AND INNOVATION - VOTE 35
Notes to the Annual Financial Statements
for the year ended 31 March 2022

5.6 Travel and subsistence

	Note	2021/22	2020/21
	<u>5</u>	R'000	R'000
Local		13,446	6,213
Foreign		2,871	1,201
Total		16,317	7,414

5.7 Other operating expenditure

	Note	2021/22	2020/21
	<u>5</u>	R'000	R'000
Professional bodies, membership and subscription fees		6,427	2,043
Resettlement costs		707	20
Other		2,794	2,246
Total		9,928	4,309

5.8 Remuneration of members of a commission or committee (Included in Consultants: Business and advisory services)
(Treasury Regulation 20.2.4)

Name of Commission / Committee	No. of members	2021/22 R'000	2020/21 R'000
Audit Committee	4	343	-
Bio-economy Audit Committee	7	54	-
Energy Storage Committee	3	154	-
Enterprise Risk Management Committee	4	509	-
Industrialisation Through Innovation Committee	12	160	-
Information Technology Steering Committee	1	55	-
Mainstreaming Innovation in the Public Sector	3	12	-
Mathematics and Science Education in Schools Committee	9	86	-
Ministerial Review into the effectiveness of the Technology Innovation Agency	11	174	-
NACI Council and EXCO Committee	10	317	-
NACI TVET Reference Group Committee	5	46	-
NIPMO Full Cost Committee	4	55	-
Upgrade of the National Science Technology Innovation and Information Portal Task Team	4	4	-
Retaining Local Patents Committee	5	167	-
Review of Draft Report on Research Capacity	1	25	-
Review of STEM ASA PhD Output Report	5	21	-
State of Imported Technology	5	25	-
STI Indicators Committee	6	661	-

SCIENCE AND INNOVATION - VOTE 35
Notes to the Annual Financial Statements
for the year ended 31 March 2022

STI Renewable Energy Committee	3	27	-
The Role of NSI in Implementing the NHI Committee	3	51	-
Transformation in the NSI Committee	6	82	-
		<u>3,028</u>	<u>-</u>

The sub-note was introduced in the 2021/2022 financial year as per Treasury Regulations 20.2.4 in the Modified Cash Standards

6. Payments for financial assets

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Other material losses written off	<u>6.1</u>	92	547
Debts written off	<u>6.2</u>	-	-
Total		<u>92</u>	<u>547</u>

6.1 Other material losses written off

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Nature of losses			
Losses in respect of damaged vehicle written off		92	547
Total		<u>92</u>	<u>547</u>

6.2 Debts written off

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Nature of losses			
Irrecoverable debts written off		-	-
Total		<u>-</u>	<u>-</u>

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7. Transfers and subsidies

		2021/22 R'000	2020/21 R'000
	<i>Note</i>		
Departmental agencies and accounts	<i>Annex 1B</i>	6,017,023	4,721,326
Higher education institutions	<i>Annex 1C</i>	240,526	252,948
Foreign governments and international organisations	<i>Annex 1E</i>	2,000	-
Public corporations and private enterprises	<i>Annex 1D</i>	1,957,502	1,495,783
Non-profit institutions	<i>Annex 1F</i>	249,246	259,117
Households, Gifts, Donations and Sponsorships	<i>Annex 1G&J</i>	1,130	528
Total		<u>8,467,427</u>	<u>6,729,702</u>

8. Expenditure for capital assets

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Tangible assets		8,941	6,062
Machinery and equipment	<i>8.1</i>	8,941	6,062
Intangible assets		-	-
Software	<i>8.1</i>	-	-
Patents, licences, copyright, brand names, trademarks		-	-
Total		<u>8,941</u>	<u>6,062</u>

8.1 Analysis of funds utilised to acquire capital assets – 2021/22

	Voted funds R'000	Aid assistance R'000	Total R'000
Tangible assets		-	
Machinery and equipment	8,941	-	8,941
Total	<u>8,941</u>	<u>-</u>	<u>8,941</u>

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8.2 Analysis of funds utilised to acquire capital assets – 2020/21

	Voted funds	Aid assistance	Total
	R'000	R'000	R'000
Machinery and equipment	6,062	-	6,062
Total assets acquired	6,062	-	6,062
Total	6,062	-	6,062

8.3 Finance lease expenditure included in expenditure for capital assets

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Tangible assets			
Machinery and equipment		3,769	2,732
Total		3,769	2,732

9. Cash and cash equivalents

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Consolidated Paymaster-General Account		41,746	105,328
Cash on hand		33	33
Total		41,779	105,361

10. Prepayments and Advances

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Travel and subsistence		124	-
Advances paid		10,014	6,000
Total		10,138	6,000

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10.1 Advances paid (not expensed)

	Amount as at 1 April 2021	Less: Amount expensed in current year	Add/Less: Other	Add: Current year advances	Balance as at 31 March 2022
	R'000	R'000	R'000	R'000	R'000
National Departments	6,000	(4,420)	-	8,434	10,014
Provincial departments	-	-	-	-	-
Closing balance	6,000	(4,420)	-	8,434	10,014

	Amount as at 1 April 2020	Less: Amount expensed in current year	Add/Less: Other	Add: Current year advances	Balance as at 31 March 2021
	R'000	R'000	R'000	R'000	R'000
National departments	122	(459)	-	6,337	6,000
Provincial departments	-	-	-	-	-
Closing balance	122	(459)	-	6,337	6,000

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11. Receivables

	Note	2021/22			2020/21		
		Current R'000	Non- Current R'000	Total R'000	Current R'000	Non- Current R'000	Total R'000
Claims recoverable	<u>11.1</u>	1,400	44	1,444	1,918	12	1,930
Recoverable expenditure	<u>11.2</u>	8	53	61	132	17	149
Staff debt	<u>11.3</u>	499	97	596	461	114	575
Total		1,907	194	2,101	2,511	143	2,654

11.1 Claims recoverable

	Note	2021/22 R'000	2020/21 R'000
National departments	<u>11</u>	-	667
Households and non-profit institutions		1,444	1,263
Total		1,444	1,930

11.2 Recoverable expenditure (disallowance accounts)

	Note	2021/22 R'000	2020/21 R'000
Income tax debt	<u>11</u>	-	-
Persal Salaries and Stoppages		-	-
Damages to vehicles		61	149
VAT Clearing account		-	-
Total		61	149

11.3 Staff debt

	Note	2021/22 R'000	2020/21 R'000
Salary overpayment	<u>11</u>	11	37
Cell phone debts		13	20
Other Debts		-	-
Income tax debt		4	4
T&S Advance Debt		-	6
Travel related Debt		76	86
Bursary Debt		492	422
Total		596	575

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12. Investments

The Department acquired shares for 35% shareholding of the Biological and Vaccines Institute (BIOVAC) of South Africa valued at R 95,038 million (calculated as percentage of retained earnings of BIOVAC as at 31 December 2021) from the Department of Health at no cost. The value of the shares could not be disclosed in the Statement of Financial Position because they were transferred at no cost.

13. Voted funds to be surrendered to the Revenue Fund

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Opening balance		113,022	73,679
Prior period error			-
As restated		<u>113,022</u>	<u>73,679</u>
Transfer from statement of financial performance		43,595	113,022
Voted funds not requested/not received	1.1	-	-
Paid during the year		<u>(113,022)</u>	<u>(73,679)</u>
Closing balance		<u>43,595</u>	<u>113,022</u>

14. Departmental revenue to be surrendered to the Revenue Fund

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Opening balance		27	13
Prior period error		-	-
As restated		<u>27</u>	<u>13</u>
Transfer from Statement of Financial Performance		1,090	2,241
Paid during the year		<u>(1,102)</u>	<u>(2,227)</u>
Closing balance		<u>15</u>	<u>27</u>

15. Payables – current

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Clearing accounts	15.1	65	36
Other Payables	15.2	-	-
Total		<u>65</u>	<u>36</u>

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15.1 Clearing accounts

	<i>Note</i>	2021/22	2020/21
		R'000	R'000
Sal: Income tax: CL	15	42	35
Sal: Pension Fund:CL		23	1
Total		65	36

16. Net cash flow available from operating activities

	<i>Note</i>	2021/22	2020/21
		R'000	R'000
Net surplus as per Statement of Financial Performance		54,552	115,684
Add back non-cash/cash movements not deemed operating activities		(109,344)	(75,662)
(Increase)/Decrease in receivables – current		604	161
(Increase)/Decrease in prepayments and advances		(4,138)	(5,864)
Increase/(Decrease) in payables – current		29	(115)
Proceeds from sale of capital assets		(235)	-
Expenditure on capital assets		8,941	6,062
Surrenders to Revenue Fund	13	(114,124)	(75,906)
Surrenders to Donor Fund		(421)	-
Voted funds not requested/not received		-	-
Net cash flow generated by operating activities		(54,792)	40,022

17. Reconciliation of cash and cash equivalents for cash flow purposes

	<i>Note</i>	2021/22	2020/21
		R'000	R'000
Consolidated Paymaster-General Account		41,746	105,328
Cash on hand		33	33
Total		41,779	105,361

18. Contingent liabilities and Contingent Assets**18.1 Contingent liabilities**

	<i>Note</i>	2021/22	2020/21
		R'000	R'000
Liable to			
Claims against the department	<i>Annex 3B</i>	401	401
Total		401	401

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1. The Department received a claim at the end of the 2018/2019 reporting period, where a former manager of science Centre alleges unfair treatment and financial loss, and is therefore claiming restitution fees. On 20 June 2019, management received a legal opinion that indicated that the claim is frivolous and vexatious therefore, it must be dismissed with cost and furthermore the amount of a claim is not a reliable estimate, therefore it cannot be disclosed. For the purpose of disclosure for 2020/21 financial year the Department, requested legal opinion to ascertain whether the status of the claim had changed and it was indicated in the legal opinion that the status is still the same.
2. The contingent liability of R401 000 was disclosed since 2013/2014 financial year. The matter has been dormant for some time; however, it can only be removed when the matter has been removed from the court roll.

18.2 Contingent Assets

The Department claimed an amount R3 491 786.00 against Charisma Bredenkamp for damages suffered. The department is uncertain, given the amount that is been claimed at Mrs Bredenkamp. Furthermore the whereabouts of Mrs Bredenkamp is unknown.

19. Commitments

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Capital commitments		1,229	32
		-	-
Total commitments		1,229	32

The disclosure is limited to Capital Asset disclosure only. The disclosure for goods and services commitment was discontinued in 2020/21 financial year.

20. Accruals and payables not recognised

20.1 Accruals

			2021/22 R'000	2020/21 R'000
Listed by economic classification	30 days	30+ days	Total	Total
Goods and services	6,471	-	6,471	2,955
Capital assets	242	-	242	-
Total	6,713	-	6,713	2,955

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		2021/22 R'000	2020/21 R'000
Listed by Programme	<i>Note</i>		
Programme 1: Administration		5,007	2,053
Programme 2: Technology Innovation		583	106
Programme 3: International Cooperation and Resources		472	540
Programme 4: Research, Development and Support		441	148
Programme 5: Socio-Economic Innovation Partnerships		210	108
Total		6,713	2,955

20.2 Payables not recognised

Listed by economic classification	30 days	30 +days	Total	Total
Goods and services	10	-	10	-
Capital assets	-	-	-	-
Total	10	-	10	-

	<i>Note</i>	2021/22 R'000	2020/21 R '000
Listed by Programme			
Programme 1: Administration		10	-
Programme 2: Technology Innovation		-	-
Programme 3: International Cooperation and Resources		-	-
Programme 4: Research, Development and Support		-	-
Programme 5: Socio-Economic Innovation Partnerships		-	-
Total		10	-
Confirmed balances with other departments	<i>Annex 5</i>	203	1,083
Confirmed balances with other government entities		-	-
Total		203	1,083

The department received confirmation of balance for R 141,682.59 from Department of Justice. The department requested the invoices to confirm the amount. The R 61,855.70 is for the extended programme for recording of Indigenous Knowledge at the Indigenous Knowledge Systems Documentation Centre in Gauteng.

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21. Employee benefits

	<i>Note</i>	2021/22	2020/21
		R'000	R'000
Leave entitlement*		19,079	22,193
Service bonus (Thirteenth cheque)		7,218	7,445
Performance awards		-	1,810
Capped leave commitments		2,938	3,209
Other (Long Service Awards)		11	11
Total		29,246	34,668

*A negative amount of R 58,130.90 was offset against leave entitlement. The amount was because of a pro-rata calculation of leave taken by employees as at the 31 March 2022. In terms of the pro-rata calculation, employees are entitled to 5.49 days leave from 1 January to 31 March. If an employee takes more, leave this result in a negative leave taken for the three-month period. This situation will be automatically rectified during the leave period.

22. Lease commitments**22.1 Operating leases expenditure**

2021/22	Land R'000	Buildings and other fixed structures R'000	Machinery and equipment R'000	Total R'000
Not later than 1 year	-	875	754	1,629
Later than 1 year and not later than 5 years	-	-	-	-
Total lease commitments	-	875	754	1,629

2020/21	Land R'000	Buildings and other fixed structures R'000	Machinery and equipment R'000	Total R'000
Not later than 1 year	-	-	993	993
Later than 1 year and not later than 5 years	-	-	706	706
Total lease commitments	-	-	1,699	1,699

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22.2 Finance leases expenditure

2021/22	Land R'000	Buildings and other fixed structures R'000	Machinery and equipment R'000	Total R'000
Not later than 1 year	-	-	2,779	2,779
Later than 1 year and not later than 5 years	-	-		
Total lease commitments	-	-	2,779	2,779

2020/21	Land R'000	Buildings and other fixed structures R'000	Machinery and equipment R'000	Total R'000
Not later than 1 year	-	-	4,595	4,595
Later than 1 year and not later than 5 years	-	-	2,488	2,488
Total lease commitments	-	-	7,083	7,083

23. Accrued departmental revenue

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Fines, Court Order		330	-
Interest, Dividends and Rent on Land		172	
Other		1,112	-
Total		1,614	-

23.1 Analysis for accrued departmental revenue

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Opening balance		-	-
Less: Amounts received		-	-
Add: Amounts recognised		1,614	-
Less: Amounts written-off/reversed as irrecoverable		-	-
Total		1,614	-

The R 329,867.11 is the claim due to the department as per the Writ of Execution from the court. At year end the department was expecting an amount R 171,821.03 for interest earned on donor funds from one of the projects. The R 1,111,710.07 is for surplus advances that were paid to DIRCO for international travel at year-end. The amount will be reconciled with the outstanding vouchers when received.

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24. Irregular expenditure**24.1 Reconciliation of irregular expenditure**

	<i>Note</i>	2021/22	2020/21
		R'000	R'000
Opening balance		7,861	32,770
As restated		<u>7,861</u>	<u>32,770</u>
Add: Irregular expenditure – relating to prior year		-	-
Add: Irregular expenditure – relating to current year		-	-
Less: Prior year amount condoned		-	-
Less: Current year amounts condoned		-	-
Less: Prior year amounts not condoned and removed		-	(24,909)
Less: Current year amounts not condoned and removed		-	-
Less: Amounts recoverable (current and prior year)		-	-
Less: Amounts written off		-	-
Irregular expenditure awaiting condonation		<u>7,861</u>	<u>7,861</u>

Analysis of awaiting condonation per age classification

Current year	-	-
Prior years	7,861	7,861
Total	<u>7,861</u>	<u>7,861</u>

24.2 Details of current and prior year irregular expenditure – added current year (under determination and investigation)

Incident	Disciplinary steps taken/criminal proceedings	2021/22 R'000
		-
Total		<u>-</u>

24.3 Details of irregular expenditure condoned

Incident	Condoned by	2021/22 R'000
		-
Total		<u>-</u>

24.4 Details of irregular expenditure recoverable (not condoned)

Incident	Condoned by	2021/22 R'000
		-

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Total	-
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25. Fruitless and wasteful expenditure**25.1 Reconciliation of fruitless and wasteful expenditure**

	<i>Note</i>	2021/22 R'000	2020/21 R'000
Opening balance		-	526
Prior year period error		-	-
As restated		-	526
Fruitless and wasteful expenditure – relating to prior			
Fruitless and wasteful expenditure – relating to		-	-
current year			
Less: Amounts written off		-	(526)
Fruitless and wasteful expenditure awaiting		-	-
condonement		-	-

25.2 Analysis of current year's fruitless and wasteful expenditure

Incident	Disciplinary steps taken	2021/22 R'000
		-
Total		-

26. Events after the reporting date

There were no significant events after the reporting period

27. Related party transactions**27.1 Related party transactions**

Payments made	2021/22 R'000	2020/21 R'000
Goods and services	-	-
Total	-	-

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27.2 DSI Public Entities under ownership control of the Department of Science and Innovation

The following entities are under the ownership control of the Department in terms of Chapter 1 of the Public Finance Management Act, 1999, and report to the Minister of Higher Education Science and Innovation, and as such are related parties to the Department:

Schedule 3A – National public entities

- Human Sciences Research Council
- National Research Foundation
- South African National Space Agency
- Technology Innovation Agency

Schedule 3B – National government business enterprises

- Council for Scientific and Industrial Research

The Department transactions with these entities are limited to transfer and subsidy payments. Annexure 1C and 1E to the Annual Financial Statement reflect payments to these public entities. Where transactions other than these occur, they occur within a normal supplier/client relationship in terms of the procurement procedures of the Department and the Public Finance Management Act, 1999.

27.3 DSI Public Entities under ownership control of the Department of Higher Education

Schedule 3A – National public entities

Council on Higher Education and Training
National Student Financial Aid Scheme
South African Qualification Authority
Quality Council for Trades and Occupations
National Skills Fund

Sector Education and Training Authorities (SETAs):

Agriculture SETA
Banking SETA
Chemical Industries Education and Training Authority
Construction SETA
Culture, Arts, Tourism, Hospitality and Sports SETA
Education, Training and Development Practices SETA
Energy and Water SETA
Fibre, Processing and Manufacturing SETA

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Financial and Accounting Services SETA
 Food and Beverages SETA
 Health and Welfare SETA
 Insurance SETA
 Local Government SETA
 Manufacturing, Engineering and Related Services SETA
 Media, Information and Communication Technologies SETA
 Mining Qualifications Authority
 Public Services SETA
 Safety and Security SETA
 Services SETA
 Transport Education and Training Authority
 Wholesale and Retail SETA

Technical and Vocational Education and Training Colleges

Buffallo City College; East Cape Midlands College; Ikhala College; Ingwe College; King Hintsa College; King Sabata College; Lovedale College; Port Elizabeth College; Flavius Mareka College; Gold Fields College; Maluti College; Motheo College; Central Johannesburg College; Ekurhuleni East College; Ekurhuleni West College; Sedibeng College; South West College; Tshwane North College; Tshwane South College; Western College; Coastal College; Elangeni College; Esayidi College; Majuba College; Mnambithi College; Mthashana College; Thekwini College; Umfolozi College; Umgungundlovu College; Capricon College; Lephalale College; Letaba College; Mopani College; Sekhukhune College; Vhembe College; Waterberg College; Ehlanzeni College; Gert Sibande College; Nkangala College; Rural College; Urban College; Orbit College; Taletso College; Vuselela College; Boland College; Cape Town College; Falsebay College; Northlink College; South Cape College; West Coast College

Community Education and Training Colleges

Eastern Cape Community Education and Training College; Free State Community Education and Training College; Gauteng Community Education and Training College; KwaZulu Natal Community Education and Training College; Limpopo Community Education and Training College; Mpumalanga Community Education and Training College; Northern Cape Community Education and Training College; North West Community Education and Training College; Western Cape Community Education and Training College

27.4 Related party relationships with other Departments

All government departments and public entities in the same sphere of government are related parties to the Department of Higher Education, Science and Innovation; however, the Department

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has a related party relationship with the Department of Public Works that provides office accommodation free of charge to the department. The Department of Public works claims maintenance fees only. The department has a relationship with the Academy of Science of South Africa that is funding its operations. All the transactions the department has with these entities are at arm's length. The department did not have transactions with these entities that required disclosure in terms of the Modified Cash Standards.

28. Key management personnel

	No. of individuals	2021/22 R'000	2020/21 R'000
Political office bearers (provide detail below)	2	4,379	4,379
Officials:	-	-	-
Level 15 to 16	11	17,706	16,392
Level 14 (incl. CFO if at a lower level)	33	30,842	30,515
Total		52,927	51,286

The key management personnel do not qualify for any remuneration other than the approved remuneration structures for the different classes of key management personnel (political office bearers and officials).

29. Movable tangible capital assets

MOVEMENT IN MOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 March 2022

	Opening balance R'000	Value adjustme nts R'000	Additions R'000	Disposals R'000	Closing balance R'000
MACHINERY AND EQUIPMENT	113,279	-	9,183	18,368	104,094
Transport assets	7,801	-	1,530	1,296	8,035
Computer equipment	61,356	-	2,218	14,558	49,016
Furniture and office equipment	21,669	-	1,135	1,696	21,108
Other machinery and equipment	22,453	-	4,300	818	25,935
TOTAL MOVABLE TANGIBLE CAPITAL ASSETS	113,279	-	9,183	18,368	104,094

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29.1 Movement for 2020/21**MOVEMENT IN MOVABLE TANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2021**

	Opening balance	Prior period errors	Additions	Disposals	Closing balance
	R'000	R'000	R'000	R'000	R'000
MACHINERY AND EQUIPMENT	110,023	-	3,330	74	113,279
Transport assets	7,801	-	-	-	7,801
Computer equipment	58,218	-	3,212	74	61,356
Furniture and office equipment	21,551	-	118	-	21,669
Other machinery and equipment	22,453	-	-	-	22,453
TOTAL MOVABLE TANGIBLE CAPITAL ASSETS	110,023	-	3,330	(74)	113,279

29.3.1 Prior period errors

Nature of prior error	2020/21 R'000
Total	-

29.2 Minor assets**MINOR ASSETS OF THE DEPARTMENT FOR THE YEAR ENDED 31 March 2022**

	Intangible assets	Heritage assets	Machinery and equipment	Biological assets	Total
	R'000	R'000	R'000	R'000	R'000
Opening balance	-	-	7,610	-	7,610
Value adjustments	-	-	-	-	-
Additions	-	-	41	-	41
Disposals	-	-	237	-	237
TOTAL MINOR ASSETS	-	-	7,414	-	7,414

	Intangible assets	Heritage assets	Machinery and equipment	Biological assets	Total
Number of R1 minor assets	-	-	5,117	-	5,117
Number of minor assets at cost	-	-	4,589	-	4,576
Total	-	-	9,706	-	9,693

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Minor assets**MINOR ASSETS OF THE DEPARTMENT FOR THE YEAR ENDED 31 MARCH 2021**

	Intangible assets	Heritage assets	Machinery and equipment	Biological assets	Total
	R'000	R'000	R'000	R'000	R'000
Opening balance	-	-	7,328	-	7,328
Prior period error	-	-	-	-	-
Additions	-	-	282	-	282
Disposals	-	-	-	-	-
Total	-	-	7,610	-	7,610

	Intangible assets	Heritage assets	Machinery and equipment	Biological assets	Total
Number of R1 minor assets	-	-	5,750	-	5,750
Number of minor assets at cost	-	-	4,722	-	4,722
	-	-	10,472	-	10,472

29.4.1 Prior period errors**Nature of prior error**

2020/21
R'000

30 Intangible Capital Assets**MOVEMENT IN INTANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 March 2022**

	Opening balance R'000	Additions R'000	Disposals R'000	Closing balance R'000
Software	7,483	-	-	7,483
Patents, licences, copyright, brand names, trademarks	-	-	-	-
TOTAL INTANGIBLE CAPITAL ASSETS	7,483	-	-	7,483

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30.1 Additions**ADDITIONS TO INTANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 March 2022**

	Cash	Non-cash	(Development work in progress current costs)	Received current, not paid (Paid current year, received prior year)	Total
	R'000	R'000	R'000	R'000	R'000
Software	-	-	-	-	-
TOTAL ADDITIONS TO MOVABLE TANGIBLE CAPITAL ASSETS	-	-	-	-	-

30.2 Disposals**DISPOSALS OF INTANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 March 2022**

	Sold for cash	Transfer out or destroyed or scrapped	Total disposals	Cash received actual
	R'000	R'000	R'000	R'000
Software	-	-	-	-
TOTAL DISPOSAL OF INTANGIBLE CAPITAL ASSETS	-	-	-	-

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30.3 Intangible capital assets**MOVEMENT IN INTANGIBLE CAPITAL ASSETS PER ASSET REGISTER FOR THE YEAR ENDED 31 MARCH 2021**

	Opening balance	Prior year error balances	Additions	Disposals	Closing balance
	R'000	R'000	R'000	R'000	R'000
Software	7,483	-	-	-	7,483
Patents, licences, copyright, brand names, trademarks	-	-	-	-	-
TOTAL INTANGIBLE CAPITAL ASSETS	7,483	-	-	-	7,483

31. Principal-agent arrangements**31.1 Department acting as the principal**

	2021/22 R'000	2020/21 R'000
Department of Justice and Constitutional Development	-	309
Total	-	309

The Department of Science and Innovation, Department of Justice, and Constitutional Development are not in an agent-principal arrangement. The disclosure in 2020/ 2021 financial year was inaccurate.

	Note ANNEXURE 11	2021/22 R'000	2020/21 R'000
32.COVID 19 Response Expenditure			
Goods & Services		27	1,873
Transfers and subsidies		41,051	147,080
Expenditure for capital assets		-	-
Total		41,078	148,953

The note was introduced in 2020/2021 financial year in order to allocate expenditure relating to Covid 19.

SCIENCE AND INNOVATION - VOTE 35
Annexures to the Annual Financial Statements
for the year ended 31 March 2022

ANNEXURE 1B**STATEMENT OF TRANSFERS TO DEPARTMENTAL AGENCIES AND ACCOUNTS**

DEPARTMENT/AGENCY/ACCOUNT	TRANSFER ALLOCATION				TRANSFER		2020/21 Appropriation Act R'000
	Adjusted Appropriation Act	Rollovers	Adjustments	Total available	Actual transfer	% of Available funds transferred	
	R'000	R'000	R'000	R'000	R'000	%	
Agricultural Research Council	40,000	-	-	40,000	36,948	92%	8,000
Academy of Science of South Africa	33,210	-	-	33,210	33,210	100%	33,702
Human Science Research Council	426,764	-	-	426,764	413,455	97%	353,123
National Research Foundation	4,458,927	-	-	4,458,927	4,024,098	90%	3,425,685
Council for Geoscience	-	-	-	-	-	-	852
South African Council for Natural Science Professions	-	-	-	-	-	-	10,000
South African Medical Research Council	241,676	-	2,118	243,794	229,216	94%	196,211
South African National Biodiversity Institute	45,000	-	-	45,000	44,101	98%	24,050
South African National Energy Development Institute	209,130	-	-	209,130	195,717	94%	153,423
South African National Space Agency	255,132	-	-	255,132	250,083	98%	223,799
South African Weather Services	1,000	-	-	1,000	1,000	100%	-
Technology Innovation Agency	757,248	-	-	757,248	737,813	97%	660,399
Public Investment Commission	-	-	-	-	-	-	48,000
Water Research Commission	48,000	-	-	48,000	47,717	99%	27,790
Mpumalanga Tourism & Parks Board	2,500	-	-	2,500	2,175	87%	-
National Health Laboratory Services	2,000	-	-	2,000	1,490	75%	-
Total	6,520,587	-	2,118	6,522,705	6,017,023		5,165,034

SCIENCE AND INNOVATION - VOTE 35

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for the year ended 31 March 2022

ANNEXURE 1C
STATEMENT OF TRANSFERS TO HIGHER EDUCATION INSTITUTES

DEPARTMENT/AGENCY/ACCOUNT	TRANSFER ALLOCATION				TRANSFER		2020/21 Appropriation Act R'000	
	Adjusted Appropriation Act R'000	Rollovers R'000	Adjustments R'000	Total available R'000	Actual transfer R'000	Amount not transferred		% of Available funds transferred
Cape Peninsula University of Technology	-	-	-	-	3,119	(3,119)	-100%	
Central University of Technology	-	-	-	-	75	(75)	-100%	
Durban University of Technology	-	-	-	-	-	-	-	
Nelson Mandela University	-	-	-	-	1,148	(1,148)	-100%	
North West University	-	-	-	-	41,717	(41,717)	-100%	
Rhodes University	-	-	-	-	2,512	(2,512)	-100%	
Stellenbosch University	-	-	-	-	20,320	(20,320)	-100%	
Tshwane University of Technology	-	-	-	-	2,042	(2,042)	-100%	
University of Cape Town	-	-	-	-	47,375	(47,375)	-100%	
University of Ford Hare	-	-	-	-	1,209	(1,209)	-100%	
University of Johannesburg	-	-	-	-	8,690	(8,690)	-100%	
University of Kwazulu-Natal	-	-	-	-	36,040	(36,040)	-100%	
University of Limpopo	-	-	-	-	3,187	(3,187)	-100%	
University of Pretoria	-	-	-	-	4,640	(4,640)	-100%	
University of South Africa	-	-	-	-	8,309	(8,309)	-100%	
University of the Free State	-	-	-	-	21,913	(21,913)	-100%	
University of Western Cape	-	-	-	-	19,469	(19,469)	-100%	
University of the Witwatersrand	-	-	-	-	9,185	(9,185)	-100%	
University of Venda	-	-	-	-	4,392	(4,392)	-100%	
University of Zululand	-	-	-	-	3,775	(3,775)	-100%	
Walter Sisulu University of Technology & Science EC	-	-	-	-	1,409	(1,409)	-100%	
Total	-	-	-	-	240,526	(240,526)	-	

The expenditure for Higher Education Institutions was disclosed under annexure 1F, as per National Treasury instruction note. In 2020/2021 financial year expenditure was brought back to the annexure as per the changes on Standard Charts of Accounts (SCOA).

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ANNEXURE 1D
STATEMENT OF TRANSFERS/SUBSIDIES TO PUBLIC CORPORATIONS AND PRIVATE ENTERPRISES

NAME OF PUBLIC CORPORATION/PRIVATE ENTERPRISE	TRANSFER ALLOCATION				EXPENDITURE				
	Adjusted Appropriation Act	Rollovers	Adjustments	Total available	Actual transfer	Available funds transferred %	Capital	Current	Appropriation Act
	R'000	R'000	R'000	R'000	R'000		R'000	R'000	R'000
Public Corporations									
Transfers									
Council for Mineral Technology	-	-	-	-	48,121	-	-	48,121	9,000
Council for Scientific and Industrial Research	533,874	-	-	533,874	701,758	131.4%	645,258	56,500	327,230
South African Nuclear Energy Corporation Ltd	-	-	-	-	7,969	-	-	7,969	8,000
Greenfield Innovation	-	-	-	-	442	-	-	442	-
Public Investment Corporation	-	-	-	-	77,283	-	-	77,283	-
Water Lab	-	-	-	-	269	-	-	269	-
Subtotal	533,874			533,874	835,842	156.6%	645,258	190,584	344,230
Subsidies									
Council for Scientific and Industrial Research	978,449	-	-	978,449	978,449	100.0%	-	978,449	893,581
Subtotal: Corporation	978,449			978,449	978,449	100.0%	-	978,449	893,581
Total	1,512,323			1,512,323	1,814,291	120.0%	645,258	1,169,033	1,237,811

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Annexures to the Annual Financial Statements

for the year ended 31 March 2022

NAME OF PUBLIC CORPORATION/PRIVATE ENTERPRISE	TRANSFER ALLOCATION				EXPENDITURE			2020/21 Appropriation Act R'000	
	Adjusted Appropriation Act R'000	Rollovers R'000	Adjustments R'000	Total available R'000	Actual transfer R'000	% of Available funds transferred	Capital R'000		Current R'000
Private enterprises:									
Transfers									
Wits Health Consortium	-	-	-	-	1,500	-	-	-	-
Anza Capital (Pty) Ltd	-	-	-	-	35,000	-	-	-	-
C and M Space Investment	-	-	-	-	977	-	-	-	-
Ultramat South Africa	-	-	-	-	610	-	-	-	-
Wits Enterprise	-	-	-	-	123	-	-	-	-
The SA SME Fund Limited	-	-	-	-	105,000	-	-	-	-
Subtotal	-	-	-	-	143,210	-	-	-	-
Total	1,512,323	-	-	1,512,323	1,957,502	129.4%	645,258	1,169,033	1,237,811

SCIENCE AND INNOVATION - VOTE 35
Annexures to the Annual Financial Statements
for the year ended 31 March 2022

ANNEXURE 1E
STATEMENT OF TRANSFERS TO FOREIGN GOVERNMENT AND INTERNATIONAL ORGANISATIONS

	TRANSFER ALLOCATION			TRANSFER		2020/21 Appropriation Act R'000
	Adjusted Appropriation Act R'000	Rollovers R'000	Adjustment s R'000	Total available R'000	Actual transfer R'000	
FOREIGN GOVERNMENT / INTERNATIONAL ORGANISATION						
World Meteorological Organisation	-	-	-	-	2,000	-
Total	-	-	-	-	2,000	-

Annexures to the Annual Financial Statements

for the year ended 31 March 2022

ANNEXURE 1F

STATEMENT OF TRANSFERS TO NON-PROFIT INSTITUTIONS

NON-PROFIT INSTITUTIONS	TRANSFER ALLOCATION			EXPENDITURE		2020/21	
	Adjusted Appropriation Act R'000	Rollovers R'000	Adjustments R'000	Total available R'000	Actual transfer R'000		% of Available funds transferred %
Transfers							
African Astronomy Society	6,530	-	-	6,530	6,530	100%	12,000
Centre for the Aids Programme	-	-	-	-	-	-	500
Centre for Phonetic and Genomic	47,792	-	-	47,792	47,792	100%	69,355
Da Vinci TT100 Awards Programme	5,000	-	-	5,000	5,000	100%	10,000
Desmond Tutu HIV Foundation	-	-	-	-	-	-	500
Duzi-Umngeni Conservation Trust	25,301	-	-	25,301	25,301	100%	10,000
Ebukhosini Empowerment Federation of African Engineering Organisations	250	-	-	250	250	100%	1,000
Forestry South Africa	-	-	-	-	-	-	8,000
Fresh Produce Exporters Forum	-	-	-	-	-	-	10,000
Fine Bubble Technologies	414	-	-	414	414	100%	3,000
Gauteng Provincial Government	-	-	-	-	-	-	1,000
Greenfield Innovation	-	-	-	-	-	-	1,000
Greenmatter	400	-	-	400	400	100%	2,000
International Atomic Energy Agency	5,000	-	-	5,000	5,014	100%	8,000
International Centre for Genetic Engineering and Biotechnology	17,500	-	10,000	27,500	27,455	100%	20,086

SCIENCE AND INNOVATION - VOTE 35
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for the year ended 31 March 2022

NON-PROFIT INSTITUTIONS	TRANSFER ALLOCATION				EXPENDITURE		2020/21
	Adjusted Appropriation Act	Rollovers	Adjustments	Total available	Actual transfer	% of Available funds transferred	Appropriation Act
	R'000	R'000	R'000	R'000	R'000	%	R'000
Khulisa Management Services	-	-	-	-	-	-	1,500
Mapungubye Institute for Strategy	1,700	-	-	1,700	1,708	100%	-
Mobile Application Laboratory NP	9,200	-	-	9,200	9,194	100%	8,000
Mpilonhle	2,700	-	-	2,700	2,700	100%	6,000
Mpumalanga Tourism and Parks Agency	-	-	-	-	-	-	3,000
National Science and Technology Forum	12,500	-	-	12,500	12,490	100%	15,000
Nka'thuto EduPropeller	254	-	-	254	254	100%	-
Nomkhulwane Culture and Youth Development	120	-	-	120	120	100%	-
Nuclear Medicine Research infrastructure	67,259	-	27,241	94,500	94,500	100%	125,000
PAMDEV	-	-	-	-	-	-	2,000
South African SAN Institute	600	-	-	600	600	100%	1,000
South African Council for Natural Scientific Professions	4,700	-	-	4,700	4,700	100%	-
South African Local Government Association	-	-	-	-	-	-	3,645
Sefako Makgatho Health Science	-	-	-	-	-	-	2,000
South African Institute of Physics	1,670	-	-	1,670	1,670	100%	3,000
South African Research Innovation Management Association	1,282	-	-	1,282	1,282	100%	5,000

SCIENCE AND INNOVATION - VOTE 35
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	TRANSFER ALLOCATION				EXPENDITURE		2020/21
	Adjusted Appropriation Act R'000	Rollovers R'000	Adjustments R'000	Total available R'000	Actual transfer R'000	% of Available funds transferred %	
NON-PROFIT INSTITUTIONS							
South African Mathematics Foundation	837	-	-	837	837	100%	-
Sugar Milling Research Institute	-	-	-	-	-	-	15,000
Task Foundation	-	-	-	-	-	-	500
The African Institute for Mathematical Sciences	1,035	-	-	1,035	1,035	100%	-
The South African SME Fund LTD	-	-	-	-	-	-	43,000
Wine Industry Network of Expertise	-	-	-	-	-	-	5,000
	398,084	-	37,241	435,325	249,246		395,086
Total	398,084	-	37,241	435,325	249,246		395,086

SCIENCE AND INNOVATION - VOTE 35
Annexures to the Annual Financial Statements
for the year ended 31 March 2022

ANNEXURE 1G
STATEMENT OF TRANSFERS TO HOUSEHOLDS

	TRANSFER ALLOCATION				EXPENDITURE		2020/21 Appropriation Act R'000
	Adjusted appropriation Act R'000	Rollovers R'000	Adjustments R'000	Total available R'000	Actual transfer R'000	% of Available funds transferred %	
HOUSEHOLDS							
Transfers							
Leave gratuity: Aphane MR	-	-	-	-	-	-	30
Leave gratuity: Baloyi TM	-	-	50	50	87	174%	-
Leave gratuity: Booysen Q	-	-	10	10	10	100%	-
Leave gratuity: Galada N	-	-	5	5	5	100%	-
Leave gratuity: Higgins PP	-	-	-	-	-	-	70
Leave gratuity: Hugo V	-	-	5	5	5	100%	-
Leave gratuity: January NN	-	-	50	50	91	182%	-
Leave gratuity: Letaba P	-	-	-	-	-	-	70
Leave gratuity: Lephothe K	-	-	12	12	12	100%	-
Leave gratuity: Mdaka PO	-	-	50	50	127	254%	-
Leave gratuity: Mabeba GJ	-	-	-	-	-	-	30
Leave gratuity: Magadla MA	-	-	66	66	66	100%	-
Leave gratuity: Magasela	-	-	32	32	32	100%	-
Leave gratuity: Makhoba LI	-	-	41	41	41	100%	-
Leave gratuity: Manyanga DE	-	-	85	85	85	100%	-
Leave gratuity: Mlaba SQ	-	-	1	1	1	100%	-
Leave gratuity: Mmaseemba	-	-	-	-	-	-	15
Leave gratuity: Mareme N	-	-	-	-	34	-	-
Leave gratuity: Mashigo R	-	-	20	20	33	165%	-
Leave gratuity: Mokotedi ML	-	-	50	50	160	320%	-

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Leave gratuity: Mulibana L	-	10	10	17	170%	-
Leave gratuity: Mangqangwana M	-	10	10	17	170%	-
Leave gratuity: Parkes JP	-	20	20	67	335%	-
Leave gratuity: Pillay G	-	-	-	-	-	100
Leave gratuity: Ratombo MS	-	50	50	169	338%	-
Leave gratuity: Seleti YN	-	-	-	-	-	170
Leave gratuity: Tsetsane YN	-	-	-	-	-	15
Leave gratuity: Xakashe N	-	5	5	11	220%	-
Women in Science	-	-	-	-	-	50
Postdoctoral Research Conference	-	-	-	60	-	-
TOTAL	-	572	572	1,130	-	550

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ANNEXURE 11

STATEMENT OF LOCAL AND FOREIGN AID ASSISTANCE RECEIVED

NAME OF DONOR	PURPOSE	OPENING BALANCE R'000	REVENUE R'000	EXPENDITURE R'000	PAID BACK ON/BY 31 MARCH R'000	CLOSING BALANCE R'000
Received in cash						
	EASASTAP Plus: To develop a skilled and capable workforce	421	1,082	1,000	421	82
	GBS- National System of Innovation	-	68,740	58,955	-	9,785
Subtotal		421	69,822	59,955	421	9,867
Received in kind						
Subtotal		-	-	-	-	-
TOTAL		421	69,822	59,955	421	9,867

SCIENCE AND INNOVATION - VOTE 35

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ANNEXURE 1J**STATEMENT OF GIFTS, DONATIONS AND SPONSORSHIPS MADE AND REMISSIONS, REFUNDS AND PAYMENTS MADE AS AN ACT OF GRACE**

NATURE OF GIFT, DONATION OR SPONSORSHIP	2021/22	2020/21
	R'000	R'000
Paid in cash		
Women in Science Awards	-	50
Postdoctoral Research Conference	60	-
SUB TOTAL	60	50
TOTAL	60	50

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ANNEXURE 2B
STATEMENT OF INVESTMENTS IN AND AMOUNTS OWING BY/TO ENTITIES AS AT 31 March 2022

NAME OF ENTITY	Nature of business	Cost of investment R'000		Net Asset value of Investment R'000		Amount owing to Entities R'000		Amount owing by Entities R'000	
		2021/2022	2020/2021	2021/2022	2020/2021	2021/2022	2020/2021	2021/2022	2020/2021
Controlled entities									
	-	-	-	-	-	-	-	-	-
Non-controlled entities									
	-	-	-	-	-	-	-	-	-
Biological Vaccine Institute (BIOVAC)	Pharmaceutical Industry (35% shareholding)	-	-	95,038	142,035	-	-	-	-
Total		-	-	95,038	142,035	-	-	-	-

The Department of Science and Technology acquired BIOVAC shares from the Department of Health. The shares were transfer to the DST without any financial implications to the department. The amount of R 95,038 million is the value of shares calculated at 35% of the retained earnings of BIOVAC as at 31 December 2021.

Annexures to the Annual Financial Statements

for the year ended 31 March 2022

ANNEXURE 3B STATEMENT OF CONTINGENT LIABILITIES AS AT 31 March 2022

Nature of liability	Opening balance 1 April 2021	Liabilities incurred during the year	Liabilities paid/cancelled/re duced during the year	Liabilities recoverable)	Closing balance 31 March 2022
	R'000	R'000	R'000	R'000	R'000
The claim against the department in respect of injuries allegedly sustained when the claimant fell in an open man hole in the Pretoria National Zoo Gardens.	401	-	-	-	401
Total	401	-	-	-	401

The Department received a claim at the end of the 2018/2019 reporting period, where a former manager of science centre alleges unfair treatment and financial loss, and is therefore claiming restitution fees. On 20 June 2019 management received a legal opinion that indicated that the claim is frivolous and vexatious therefore it must be dismissed with cost and furthermore the amount of a claim is not a reliable estimate, therefore it cannot be disclosed. For the purpose of disclosure for 2020/21 financial year the Department, requested legal opinion to ascertain whether the status of the claim had changed and it was indicated in the legal opinion that the status is still the same.

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ANNEXURE 4**CLAIMS RECOVERABLE**

Government Entity	Confirmed balance outstanding		Unconfirmed balance outstanding		Total	
	31/03/2022	31/03/2021	31/03/2022	31/03/2021	31/03/2022	31/03/2021
	R'000	R'000	R'000	R'000	R'000	R'000
Department						
Department of Higher Education and Training	-	637	-	-	-	637
Subtotal	-	637	-	-	-	637
Other government entities						
Subtotal	-	-	-	-	-	-
Total	-	637	-	-	-	637

SCIENCE AND INNOVATION - VOTE 35

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ANNEXURE 5 INTER-GOVERNMENT PAYABLES

GOVERNMENT ENTITY	Confirmed balance		Unconfirmed balance		TOTAL	
	31/03/2022 R'000	31/03/2021 R'000	31/03/2022 R'000	31/03/2021 R'000	31/03/2022 R'000	31/03/2021 R'000
Department						
Current						
Department of International Relations and Cooperation	-	424	-	-	-	424
Department of Justice and Constitutional Development	142	655	-	-	142	655
Department of Transport	-	4	-	-	-	4
Gauteng Sports Arts Culture and Recreation	61	-	-	-	61	-
Sub Total	203	1,083	-	-	203	1,083
Other government entities						
Current						
	-	-	-	-	-	-
	-	-	-	-	-	-
Total	203	1,083	-	-	203	1,083

The department received confirmation of balance for R 141,682.59 from Department of Justice. The department requested the invoices to confirm the amount. The R 61,855.70 is for the extended programme for recording of Indigenous Knowledge at the Indigenous Knowledge Systems Documentation Centre in Gauteng.

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ANNEXURE 6**INVENTORY**

Inventory	Note	Quantity	2021/22	Quantity	2020/21
			R'000		R'000
Opening balance		-	-	-	-
Add/(Less): Adjustments to prior year balance		-	-	-	-
Add: Additions/Purchases – Cash		-	-	-	-
Add: Additions - Non-cash		-	-	-	-
(Less): Disposals		-	-	-	-
(Less): Issues		-	-	-	-
Add/(Less): Adjustments		-	-	-	-
Closing balance		-	-	-	-

The inventory was transferred to consumables in terms of the requirements of the modified cash standards and the accounting manual for departments. In terms of the Modified Cash Standards, the disclosure for inventory is not applicable in 2021/22 financial year.

Annexures to the Annual Financial Statements

for the year ended 31 March 2022

ANNEXURE 8A INTER-ENTITY ADVANCES PAID (note 17)

	Confirmed balance		Unconfirmed balance		TOTAL	
	31/03/2022 R'000	31/03/2021 R'000	31/03/2022 R'000	31/03/2021 R'000	31/03/2022 R'000	31/03/2021 R'000
GOVERNMENT ENTITY						
DEPARTMENTS						
Current	8,117	6,000	-	-	8,117	6,000
Government Communications (GCIS)						
Total	8,117	6,000	-	-	8,117	6,000

SCIENCE AND INNOVATION - VOTE 35
Annexures to the Annual Financial Statements
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ANNEXURE 11
COVID 19 RESPONSE EXPENDITURE
Per quarter and in total

GOODS AND SERVICES

Expenditure per economic classification	April 2021	May 2021	June 2021	Sub-total Q1	July 2021	Aug 2021	Sept 2021	Sub-total Q2	Oct 2021	Nov 2021	Dec 2021	Sub-total Q3	Jan 2022	Feb 2022	Mar 2022	Sub-total Q4	2021/22 Total	2020/21 Total	
Advertising	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	903	-
Minor Assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	137	-
Consumable Supplies	-	-	21	21	-	1	-	1	1	1	1	3	-	-	-	2	2	347	-
Property Payments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	220	-
Consult: Business & Advisory Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71	-
Travel and Subsistence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Consumable: Stationery, Printing & Office supplies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	194	-
GOODS AND SERVICES	-	-	21	21	-	1	-	1	1	1	1	3	-	-	-	2	2	1,873	-

TRANSFERS AND SUBSIDIES

Expenditure per economic classification	April 2021	May 2021	June 2021	Sub-total Q1	July 2021	Aug 2021	Sept 2021	Sub-total Q2	Oct 2021	Nov 2021	Dec 2021	Sub-total Q3	Jan 2022	Feb 2022	Mar 2022	Sub-total Q4	2021/22 Total	2020/21 Total	
Institutional Planning Support	500	-	-	500	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-
Health Innovation	-	-	-	-	-	-	-	-	-	-	25,000	25,000	-	-	-	-	25,000	29,439	-
HIV and AIDS prevention and treatment technologies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,000
Global Science: AGR International Resource	4,536	-	-	4,536	-	-	-	-	-	-	-	-	-	-	-	-	-	4,536	25,485
Global Science: AFR MULT AGR	-	-	-	-	-	-	-	-	-	-	2,000	2,000	-	-	-	-	2,000	1,002	-

SCIENCE AND INNOVATION - VOTE 35

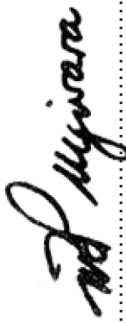
Annexures to the Annual Financial Statements
for the year ended 31 March 2022

	April 2021	May 2021	June 2021	Sub- total Q1	July 2021	Aug 2021	Sept 2021	Sub- total Q2	Oct 2021	Nov 2021	Dec 2021	Sub- total Q3	Jan 2022	Feb 2022	Mar 2022	Sub- total Q4	2021/22 Total	2020/21 Total
Global Science : Bilateral Co-operation	-	-	-	-	-	-	-	-	-	-	9,015	9,015	-	-	-	-	9,015	2,344
Indigenous Knowledge Systems	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,400
Social Impact Board	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33,422
Hydrogen Strategy Cap	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,000
Innovation for Inclusive Development	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17,225
Local Manufacturing Capacity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	763
Strategic Scientific Platforms (TP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000
TRANSFERS AND SUBSIDIES	5,036	-	-	5,036	-	-	-	-	-	-	36,015	36,015	-	-	-	-	41,051	147,080
TOTAL COVID 19 RESPONSE EXPENDITURE	5,036	-	21	5,057	-	1	-	1	1	1	36,016	36,018	-	-	2	2	41,078	148,953

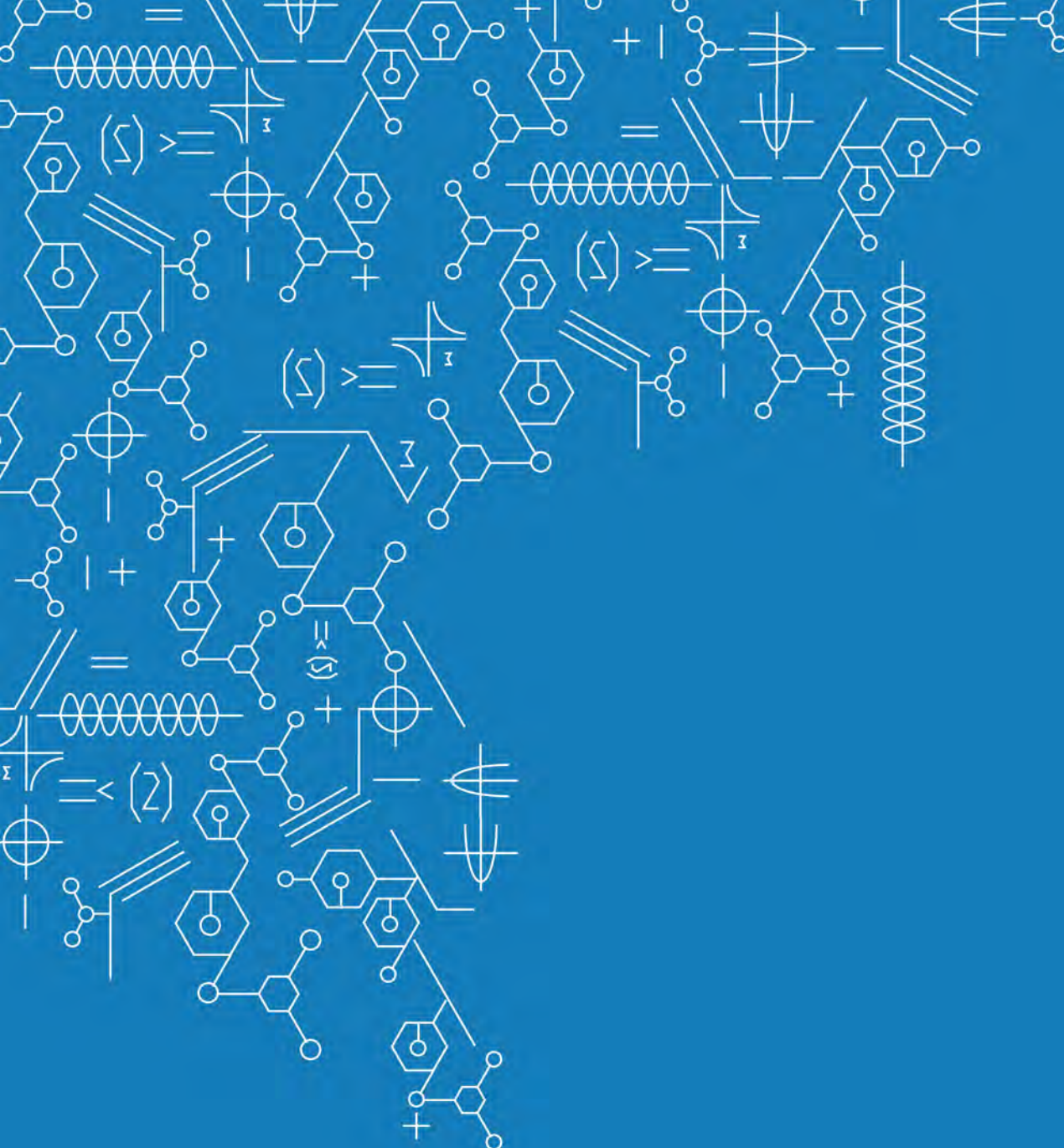
The annexure was introduced in the 2020/2021 financial year in order to allocate expenditure relating to Covid 19.

APPROVAL

The Annual Financial Statements set out in pages 144 and 284 for the financial year ended 31 March 2022 have been approved.



PM MJWARA
DIRECTOR GENERAL
31 JULY 2022



DEPARTMENT OF SCIENCE AND INNOVATION

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