

Budgetary Review and Recommendation Report of the Portfolio Committee on Higher Education, Science and Innovation on the Performance of the Department of Science and Innovation for the 2022/23 Financial Year, Dated 3 November 2023

The Portfolio Committee on Higher Education, Science and Innovation, having considered the performance of the Department of Science and Innovation, Council for Scientific and Industrial Research, Human Sciences Research Council, National Research Foundation, South African National Space Agency and the Technology Innovation Agency for the 2022/23 financial year, reports as follows:

1. INTRODUCTION

1.1. Mandate of the Portfolio Committee on Higher Education, Science and Innovation

The Portfolio Committee on Higher Education, Science and Innovation (hereafter, the Committee) is mandated by the Constitution of the Republic of South Africa, 1996 and the Rules of Parliament to oversee the activities and performance of the Department of Science and Innovation (hereafter, the Department or DSI) and the entities that report to it. Furthermore, the Committee must consider, amend and/or initiate legislation; consider international agreements and provide a platform for the public to present their views on issues and/or legislation specific to the science, technology and innovation (STI) system.

1.2. Purpose of and method to develop the 2023 Budgetary Review and Recommendation Report

To enhance Parliament's oversight role, the Money Bills Amendment Procedure and Related Matters Act (No. 9 of 2009) was promulgated to provide Parliament with a procedure to make recommendations to the Minister of Finance to amend the budget of a national department. A key provision of this Act is that Portfolio Committees must annually compile Budgetary Review and Recommendation (BRR) Reports. These BRR Reports provide an assessment of service delivery performance given available resources; evaluates the effective and efficient use of resources; and may make recommendations on the forward use of resources. The BRR Reports are also source documents for the Committees on Appropriations when they make recommendations to the Houses of Parliament on the Medium-Term Budget Policy Statement (MTBPS).

Accordingly, the Committee considered the Department and entities' 2022/23 Annual Performance Plans, budget allocations, quarterly performance and expenditure trends, and conducted oversight by having briefings on specific initiatives and programmes. On 13 October 2023, the Committee considered the 2022/23 Annual Reports of the Department, South African National Space Agency (SANSa) and the Technology Innovation Agency (TIA). On 20 October 2023, the Committee considered the 2022/23 Annual Reports of the Council for Scientific and Industrial Research (CSIR), Human Sciences Research Council (HSRC) and the National Research Foundation (NRF). The Committee also invited the Auditor-General of South Africa (AGSA) to explain the 2022/23 audit outcomes of the science and innovation portfolio.

2. POLICY CONTEXT

2.1. National Development Plan and Medium-Term Strategic Framework

The National Development Plan (NDP) states that South Africa's National System of Innovation (NSI) needs to be expanded as well as be more effective and aligned with the sectors that will realise the country's growth objectives. This requires that:

- South Africa invests more in research and development (R&D);
- The STI institutional arrangement improves the link between innovation and the productive needs of industry;
- Government should collaborate with the private sector to raise the level of R&D in companies; and

- Public investments in research infrastructure should be focussed on and fulfil the needs of a modern economy.

The Department's focus and commitments are mainly on Priority 2 (Economic transformation and job creation) and Priority 3 (Education, skills and health) of the 2019-2024 Medium-Term Strategic Framework (MTSF).

2.2. 2019 White Paper on Science, Technology and Innovation and 2022-2032 Science, Technology and Innovation Decadal Plan

The 2019 White Paper on STI sets the current long-term policy direction for the NSI and seeks to ensure an increasing role for and use of STI to accelerate inclusive economic growth, increase the competitiveness of the economy and improve the livelihoods of South Africa's citizens. The 2022-2032 STI Decadal Plan, approved by Cabinet on 30 November 2022, is the implementation plan of the 2019 White Paper on STI and serves as a government master plan.

The STI Decadal Plan identifies:

Five System Goals related to ensuring an inclusive and coherent NSI; expanding and transforming the research system; increasing and developing future-proof human capabilities; enabling an innovation driven environment; and significantly increasing funding for the NSI.

Three Societal Grand Challenges related to climate change and environmental sustainability; future-proof education and skills; and the future of society.

Six STI Priorities related to modernising the manufacturing, agriculture and mining sectors of the economy; new sources of growth within the digital and circular economies; health research and innovation; energy research and innovation; innovation to enable a capable state; and innovation in support of socio-economic progress.

2.3. 2020-2025 Strategic Plan of the Department of Science and Innovation

The Department seeks to realise the vision of *"Increased well-being and prosperity through STI."* Thus, the Department is responsible for developing, coordinating and managing the NSI by providing policy leadership and creating an enabling environment for STI.

In 2022/23, the Department tabled a revised 2020-2025 Strategic Plan that was informed by the prevailing policy and environmental context that included the key interventions advanced by the STI Decadal Plan, the revised 2019-2024 MTSF, the continued need to support the national response to COVID-19, the Department's contribution to the Economic Reconstruction and Recovery Plan (ERRP), and the confirmed and projected cuts to fiscal resources announced by National Treasury. As a result, the Department's overall number of 5-year targets was reduced from 24 to 20.

The Department, seeking to ensure that the NSI expands its positive impact on reducing poverty, inequality and unemployment as envisioned by the 2019 White Paper on STI, frames its work around the following six Strategic Outcomes:

- Outcome 1:** A transformed, inclusive, responsive and coherent NSI;
- Outcome 2:** Human capabilities and skills for the economy and for development;
- Outcome 3:** Increase knowledge generation and innovation output;
- Outcome 4:** Knowledge utilisation for economic development in (a) revitalising existing industries and (b) stimulating R&D-led industrial development;
- Outcome 5:** Knowledge utilisation for inclusive development; and
- Outcome 6:** Innovation in support of a capable and development state.

3. 2022/23 FINANCIAL PERFORMANCE OF THE DEPARTMENT OF SCIENCE AND INNOVATION

Science, technology and innovation are important drivers of sustainable economic growth, economic competitiveness, socio-economic development and environmental sustainability. However, the impact

of STI is not achievable in the short term. Research and development are long-term endeavours, as many of the successes claimed today as part of the Department's performance have been many years in the making. For example, the Square Kilometre Array (SKA) project originated in 2006/07, building on the KAT-7 engineering expertise. The Hydrogen and Fuel Cell Technologies RDI Strategy, on which the Hydrogen South Africa programme (now in the third phase of its implementation) is based, was approved in 2009. Furthermore, the STI-enabled national response to the COVID-19 pandemic was only possible because of South Africa's historical investment in building national STI capability. It was these capabilities that were immediately mobilised to, among many others, enhance South Africa's ability to test for COVID-19, monitor and track the rates of infection, ensure that we participate in global efforts to develop a vaccine, direct efforts to investigate prophylactic measures based on indigenous knowledge, assess the public's attitudes to and perceptions of the virus and the measures instituted to mitigate its effects, and locally develop and manufacture ventilators. In addition, our genomic surveillance programme led to South Africa discovering the first variant of COVID-19, which informed the global scientific community how this virus mutates.

In his weekly newsletter in January 2022, the President stated that science and technology have a key role to play in the country's economic recovery; in attracting greater levels of investment; and in contributing to skills, knowledge and technology transfer to capacitate the country's workforce. The President further stated that investment in STI to revitalise and modernise existing industries, as well as create new sources of growth and stimulate industrialisation was therefore being prioritised. In the 2022 State of the Nation Address, the President stated that the overriding priorities of 2021 remained. These were overcoming the coronavirus pandemic, the massive rollout of infrastructure, a substantial increase in local production, an employment stimulus to create jobs and support livelihoods and the rapid expansion of energy generation capacity. In relation to the challenges facing the country, STI is central to finding solutions to most of these and the President enumerated several examples. For instance, the strides made through the Hydrogen South Africa programme to position the country within the global hydrogen economy; the development of local capability in vaccine and ventilator production; and the technical expertise developed in agro-processing and renewable energy.

The 2022/23 consolidated government expenditure for innovation, science and technology was R18.1 billion (R17.3 billion in 2021/22, revised estimate), which was 1% of the total Medium-Term Expenditure Framework (MTEF) allocation and 8% of the consolidated economic development expenditure of R227.1 billion.

The Department's 2022/23 budget allocation increased nominally by R127.7 million from R9 billion in the 2021/22 financial year to R9.1 billion. This represented, when adjusted for inflation, a real decrease of 2.95% (real increase of 17.8% realised in 2021/22). In terms of economic classification, the apportionment of the Department's 2022/23 budget allocation of R9.1 billion remained the same as in previous years. Hence, the budget allocation comprised Current payments of R577.6 million (6.3% of total allocation and R569.3 million in 2021/22), Transfers and subsidies of R8.6 billion (94.5% of total allocation and R8.4 billion in 2021/22), and Payments for capital assets of R3 million (0.03% of total allocation and unchanged from 2021/22).

The Department's budget funds five programmes, namely:

- Programme 1 – Administration
- Programme 2 – Technology Innovation
- Programme 3 – International Cooperation and Resources
- Programme 4 – Research, Development and Support
- Programme 5 – Socio-economic Innovation Partnerships

These programmes fulfil the Department's mandate of realising the full potential of STI in social and economic development. The percentage budget allocation to the Programmes remained essentially the same as in previous financial years, and Programmes 2, 4 and 5 that are responsible for the Transfers to the Department's entities, were allocated 94.7% of the Department's total budget allocation.

In October 2022, with the tabling of the Medium-Term Budget Policy Statement (MTBPS), the Department's budget allocation remained unchanged at R9.1 billion; however, shifts and virements

totalling R150.5 million and R243.6 million respectively, were made. Significant changes to Programme allocations predominantly under Transfers and subsidies included an additional R121.2 million to Programme 2 and a reduction of R127.2 million from Programme 4. This movement/reallocation of funds totalled R394 million and notable among these were the:

- Square Kilometre Array, which received R231.6 million. The total 2022/23 allocation to the SKA was R1 billion;
- Space Weather Centre and Deep Space Ground Station facility, which received R26.7 million;
- Hydrogen Society Roadmap Catalytic Projects, which received R50 million; and
- Vaccine Innovation Development and Manufacturing Strategy, which received R40 million.

The Accounting Officer reported in the 2022/23 Annual Report that after the Adjusted Estimates of National Expenditure (AENE), further virements totalling R59.5 million were made. In addition, R714 000 was moved between major items and R20.2 million was moved between Programmes. Included in the virements was an amount of R26.6 million, which was shifted within Transfers and subsidies. The funds were used for the Strategic Industrial Bio-Innovation Programme, the Innovation Bridge Portal, evidence-based innovation policy projects, the Precision Agriculture Information System, a rocket propulsion system, the Technology Stations Programme and a joint research centre.

Additional revenue raised by the Department comprised R688 000 (R1.09 million in 2021/22) from surpluses on project funds, commission from insurance on Persal transactions, interest received from a deposit account at a commercial bank, payment of bursary debts by officials and other recoverable expenditure. The Department also received R95.48 million (R69.8 million in 2021/22) in donor funds from the European Union (EU) and spent R77.48 million (R59.9 million in 2021/22) of these funds.

The Department spent R9.12 billion (99.7%) of its R9.145 billion budget allocation, underspending by R24.4 million. The Department spent 99.5% of its budget in 2021/22, 98.4% in 2020/21 and 98.5% in 2019/20. Table 3 shows the expenditure by Programme and economic classification.

The material variance in expenditure was mainly attributed to Programmes 1 and 3, and due to delays in filling prioritised positions and additional funding received for the compensation of employees with the AENE. The underspending on salaries accounted for R17.2 million of the Department's total R24.4 million underspending. The remaining R7.2 million comprised R4.8 million underspending on Transfers and subsidies due to slow spending by implementing agencies, and R2.3 million underspending on Goods and services. The latter being due to delays in the procurement of laptops to allow more staff to work from home.

Table 1: Department of Science and Innovation's 2022/23 Expenditure by Programme and Economic Classification

Programme	Final appropriation	Actual expenditure	Variance	2022/23 Expenditure as a % of final appropriation	2022/23 Programme performance
	R'000				
1. Administration	343 174	336 087	7 087	97.9%	80%
2. Technology Innovation	1 897 725	1 890 565	7 160	99.6%	83%
3. International Cooperation and Resources	165 687	161 269	4 418	97.3%	89%
4. Research, Development and Support	4 983 051	4 981 225	1 826	99.9%	86%
5. Socio-economic Innovation Partnerships	1 755 624	1 751 708	3 916	99.8%	60%
Total	9 145 262	9 120 855	24 407	99.7%	80%
Current	579 167	559 664	19 502	96.6%	

Programme	Final appropriation	Actual expenditure	Variance	2022/23 Expenditure as a % of final appropriation	2022/23 Programme performance
payments					
Transfers and subsidies	8 554 812	8 550 023	4 790	99.9%	
Payments for capital assets	11 279	11 162	117	99%	
Payments for financial assets	4	7	(3)	173.5%	
Total	9 145 262	9 120 855	24 407	99.7%	

Source: 2022/23 Annual Report of the Department of Science and Innovation

The Department did not incur any unauthorised, irregular, or fruitless and wasteful expenditure in 2022/23 or 2021/22. Irregular expenditure relating to prior years of R5.9 million was removed, as per the Public Finance Management Act (PFMA) Compliance and Reporting Framework issued by the National Treasury in the 2022/23 financial year.

The Department paid 100% of its invoices and contractual agreements within 30 days in the 2022/23 financial year.

The Department realised a R43 million surplus for 2022/23 that consisted of the R24.4 million under expenditure of voted funds, the R688 000 additional revenue raised and the R18 million under expenditure of donor funds.

3.1. Auditor-General's Report on the Financial Statements of the Department of Science and Innovation

The Auditor-General (AG) awarded the Department an unqualified audit opinion with no findings; hence, a clean audit, for the 5th consecutive financial year. The AG further stated that no material findings on compliance with key legislation and no significant deficiencies in internal control were identified.

4. 2022/23 PROGRAMME PERFORMANCE OF THE DEPARTMENT OF SCIENCE AND INNOVATION

The Department captured its 2022/23 performance reporting into 56 (52 in 2021/22) annual performance targets. The change in annual performance targets from 2021/22 was due to the following:

Programme: Administration

The performance targets were reduced from six to five, due to the completion of the process to finalise the draft STI Decadal Plan.

Programme 2: Technology Innovation

The performance targets increased from 15 to 18 by the addition of the following:

- 15 University of Technology (UoT) and Technical and Vocational Education and Training (TVET) college graduates offered experiential learning opportunities in the energy sector by 31 March 2023.
- 40 unemployed youth supported under the Technology Top 100 (TT100) Learnership/Internship Programme by 31 March 2023.
- 1 000 youth engaged through outreach, awareness and training programmes in space science by 31 March 2023.

Programme 3: International Cooperation and Resources

The performance targets remained unchanged at nine.

Programme 4: Research, Development and Support

The performance targets increased from 12 to 14 by the addition of the following:

- 300 emerging researchers awarded research grants as reflected in the NRF project reports by 31 March 2023.
- 200 black and female emerging researchers awarded research grants as reflected in the NRF project reports by 31 March 2023.

Programme 5: Socio-economic Innovation Partnerships

The performance targets remained unchanged at 10.

The Department achieved an overall performance of 80%, achieving 45 of its 56 performance targets (Table 2). This represents a significant downturn from the 92% performance achieved in 2021/22. During the Committee's in-year assessment of the Department's quarterly performance, the performance record was 79% for the 1st and 2nd quarters, 68% for the 3rd quarter and 74% for the 4th quarter.

Table 2: Department of Science and Innovation's 2022/23 Programme Performance

Programme	Achieved	Not achieved	Total	Percentage (%) Achievement
1. Administration	4	1	5	80%
2. Technology Innovation	15	3	18	83%
3. International Cooperation and Resources	8	1	9	89%
4. Research, Development and Support	12	2	14	86%
5. Socio-economic Innovation Partnerships	6	4	10	60%
Total	45	11	56	80%

In relation to overall performance for 2022/23, Programmes 1 to 4 all achieved 80% or more of their performance targets, while Programme 5 achieved 60% of its performance targets. The 11 performance targets that were not achieved (four targets were not achieved in 2021/22) are shown in Table 3.

Table 3: 2022/23 Performance Targets that were Not Achieved

Programme	Planned performance target	2022/23		
		Actual achievement	Reasons for variance	Addressing underperformance
1. Administration	94% of all approved funded prioritised positions filled by 31 March 2023	59% (50/85) of approved funded prioritised positions filled by 31 March 2023	The recruitment and selection processes were delayed due to various reasons such as positions that were put on hold, re-advertised positions, and postponement of interviews	The Chief Directorate: Human Resources developed project plans with time frames for recruitment and selection processes and holds managers accountable where delays are identified
2. Technology Innovation	Manufacturing of 3 or more CubeSats for the	Manufacturing of Zero CubeSats	Delays were caused by several factors	The funding requirements for the MDASat constellation

Programme	Planned performance target	2022/23		
		Actual achievement	Reasons for variance	Addressing underperformance
	Maritime Domain Awareness Satellite (MDASat) constellation initiated by 31 March 2023	initiated	such as the sudden resignation of staff at the implementing agent, resulting in delays in the development of onboard flight software, as well as the need for additional funding	were included in the request to National Treasury for the Space Infrastructure Hub (SIH)
	15 UoT and TVET graduates offered experiential learning opportunities in the energy sector by 31 March 2023	12 UoT and TVET graduates were offered experiential learning opportunities in the energy sector by 31 March 2023	Since this is a completely new indicator, there was no existing baseline available to inform the target setting process	To prevent a recurrence of the underperformance, a Memorandum of Understanding was signed with the Energy and Water Sector Education and Training Authority (EWSETA), which will assist the DSI to source candidates so that the recruitment process can be completed in time, and which has also committed to co-funding the internship programme
	235 new disclosures received from publicly financed research and development institutions by the National Intellectual Property Management Office (NIPMO) by 31 March 2023	217 new disclosures received from publicly financed research and development institutions by NIPMO by 31 March 2023	The target was established by considering the accomplishments in previous years. However, the number of new disclosures is not directly within the control of NIPMO	NIPMO will continue to raise awareness and remind universities and science councils to disclose intellectual property, although the number of disclosures made is not under NIPMO's control
3. International Cooperation and Resources	32 capacity building initiatives for international cooperation specifically targeting historically disadvantaged institutions (HDIs) and individuals by 31 March 2023	28 capacity building initiatives for international cooperation specifically targeting HDIs and individuals by 31 March 2023 Target first set	The limited understanding of HDI research capability among international partners limits the participation of HDIs in initiatives	DSI will proactively promote the research capability of HDIs among its international partners

Programme	Planned performance target	2022/23		
		Actual achievement	Reasons for variance	Addressing underperformance
		in 2020/21. 3 rd year this target is not achieved		
4. Research, Development and Support	25 research infrastructure grants awarded by 31 March 2023	21 annual research infrastructure grants were awarded by 31 March 2023	The variance occurred due to the forfeiture of funding for RDI projects because of non-expenditure. Additionally, two projects that were initially planned to receive funding were deferred to the 2023/24 financial year, contributing to the observed deviation from the original plan	The full portfolio of approved infrastructure projects will start being funded in the 2023/24 financial year, as will the two projects that were not funded
	4 MeerKAT extension antennas installed and commissioned by 31 March 2023	Zero extension antennas installed and commissioned	The production of the MeerKAT extension dishes is the responsibility of the Max Planck Institute. The Institute reported major delays in the dish production process due to financial and logistical challenges	To improve performance, cooperation with the implementing agent, the Max Planck Institute, has been strengthened with the recent confirmation of Germany as a full member of the SKA Organisation. The Institute has also renewed and confirmed its commitment to completing the project
5. Socio-economic Innovation Partnerships	332 high-level research students (of which 40 at PhD level) fully funded or co-funded in designated niche areas by 31 March 2023 Revised down from target in 2021/22 = 392	238 high-level research students (of which 92 at PhD level) fully funded or co-funded in designated niche areas Achievement in 2021/22 = 287	Significant amount of the industrial funding was routed from technology development projects to technology diffusion projects, leaving less funds for students. There were also difficulties in verifying the	The target has been further reduced to 200 in the 2023/24 Annual Performance Plan because the target was not aligned with the level of funding available for technology development

Programme	Planned performance target	2022/23		
		Actual achievement	Reasons for variance	Addressing underperformance
			number of students as some students did not comply with the technical indicator descriptor Same reasons for variance as in 2021/22	
	3 instruments funded in support of increased localisation, competitiveness and R&D-led industry development by 31 March 2023	1 instrument was funded in support of increased localisation, competitiveness and R&D-led industry development by 31 March 2023	The completed work under “focused interventions” did not meet the technical indicator descriptor for the definition of “funding instrument”	The technical indicator description will be updated to represent all the funding instruments
	27 innovation-support interventions funded or co-funded that strengthen provincial or rural innovation systems by 31 March 2023	25 innovation-support interventions funded or co-funded that strengthen provincial or rural innovation systems by 31 March 2023	Due diligence investigations had to be carried out into non-performing Regional Innovation Support Programme (RISP) interventions in North West and Gauteng that were terminated. Furthermore, the RISP is run through a call for proposals process and there were no calls after the two due diligence interventions had been completed	RISP interventions will be selected through an annual call for proposals process. A call for proposals currently open will contribute to the achievement of a new indicator in 2023/24 ¹
	Pre-approval decisions provided within 90 days from the date of receipt for 80% of the	Preapproval decisions provided within 90 days from date of receipt for 9% (5 of 56)	The achievement of this target was impacted by the effect of IT failure on various aspects of the	There will be (a) better use of the online system as there is now better understanding of the system, (b) increased

¹ New performance indicator in 2023/24: Number of innovation support interventions funded or co-funded to enable the development of sub-national systems of innovation in priority economic ecosystems including the digital and circular economies. Target for 2023/24 is 12.

Programme	Planned performance target	2022/23		
		Actual achievement	Reasons for variance	Addressing underperformance
	applications for the R&D Tax Incentive received between 24 February and November 2022	projects for the R&D Tax Incentive received between 24 February and November 2022	R&D Tax Incentive, and issues surrounding the availability of the online system when the backup generator for loadshedding failed. The December holidays and problems getting a quorum in January resulted in almost two months without a committee meeting. There were also some delays due to first time applications being processed using the online system, as well as delays with the final processing	reporting to executive management on the availability of DSI committee members to form a quorum, and progress with the ministerial committee appointment, and (c) increased reporting to executive management on the processing turnaround times

Source: 2022/23 Annual Report of the Department of Science and Innovation

In relation to the performance targets that were not achieved:

- The first three satellites of the Maritime Domain Awareness satellite constellation (MDASat-1) were launched from Cape Canaveral (USA) on 13 January 2022 – signifying the first launch of a satellite constellation developed on the African continent. 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.
The 2022/23 target to manufacture 3 or more CubeSats for this constellation could not proceed due to staff and money shortages. The funding was included in the budget facility for the Space Infrastructure Hub. However, according to the 2023/24 first quarter expenditure report provided by National Treasury to the Standing Committee on Appropriations, this funding had not been made available yet because SANSA was addressing the conditions attached to this funding. During the briefing on its 2022/23 Annual Report, SANSA informed the Committee that they had addressed the conditions stipulated by the National Treasury for the funding for the Space Infrastructure Hub to be released and that they were waiting on an answer from the National Treasury in this regard.
- Due to the challenges experienced by the Max Planck Institute, the target set for 2023 for the MeerKAT extension project has now been extended to 2024, and the completion originally set for 2025, has now been moved to 2026.
- The target for pre-approval decisions provided within 90 days from the date of receipt for 80% of the applications for the R&D Tax Incentive has not been met since its inception. For 2022/23, only 9% performance was achieved. Over the years, the reasons for

variance from planned performance have included staff/expertise challenges, lack of availability of committee members, the manual system of processing applications, the lack of an online system (now available since last year), this year its issues with the online system, as well as the prevailing issues, etc. Despite various actions taken, the underperformance remains unresolved.

The Department attributed underperformance in eight of the 11 targets to process delays, where the factors that led to the underperformance was outside its control. The underperformance of targets related to TVET and UoT graduates, new disclosures and support instruments was attributed to target formulation deficiencies. In these instances, the technical indicator descriptors will be updated to take cognisance of the challenges encountered thus far.

4.1. Auditor-General's Report on the Performance Information of the Department of Science and Innovation

In accordance with the Public Audit Act 25 of 2004 and the general notice issued in terms thereof, the AG audits and reports on the usefulness and reliability of the reported performance information against predetermined objectives for the selected material performance indicators presented in the annual performance report. Hence, for 2022/23, the AG selected material performance indicators from Programmes 2, 4 and 5 to measure the Department's performance on its primary mandated functions and those that are of significant national, community or public interest.

The AG did not identify any material findings on the reported performance information for the selected material performance indicators.

5. ENTITIES OF THE DEPARTMENT OF SCIENCE AND INNOVATION

The Department's entities are funded through an annual baseline allocation also known as the Parliamentary grant; specific project and/or contract funds; income that is generated from research and commissioned projects; or from income that is generated from royalty, publishing, membership, registration and/or facility fees.

5.1. Council for Scientific and Industrial Research

The CSIR's mandate is to foster, through directed and multidisciplinary research and technological innovation, industrial and scientific development. As such, the CSIR researches, develops, localises and diffuses technologies to accelerate socio-economic prosperity in South Africa.

The CSIR's strategic intent is framed by the following:

- **Growth:** To grow the CSIR's business and use its capabilities to support the inclusive growth of the South African economy. For organisational growth, this will entail developing and growing new capabilities and competencies especially those that are relevant to the fourth industrial development and to use this to grow the income and impact of the CSIR.
- **Sustainability:** Use CSIR-developed technologies to contribute to the advancement and sustainability of South African enterprises, and at the same time, the financial sustainability of the organisation in a resource-constrained environment.
- **Impact:** Focus on the commercialisation of CSIR technologies and innovations for industrial development, as well as technology and knowledge transfer that enable a capable state.
- **Relevance:** The CSIR, will through its work and the impact thereof, demonstrate the relevance of innovation in achieving economic development. This will ensure that the CSIR delivers on its mandate and remains relevant.

5.1.1. 2022/23 Revenue

The CSIR derives its income from contract R&D from the public sector, private sector and international customers; the Parliamentary grant; and royalties and licensing income. The largest portion of the CSIR's income is contract R&D from the public sector, followed by the Parliamentary grant.

The CSIR's total income amounted to R2.8 billion (R2.65 billion in 2021/22), which was 1% less than the target set. The CSIR realised a net profit of R43.6 million (R137 million in 2021/22). Contract income (public, private and international) amounted to R2 billion (R1.9 billion in 2021/22), the Parliamentary grant amounted to R738.5 million (R730.3 million in 2021/22) and Royalty income amounted to R1.6 million (R7.4 million in 2021/22). Expenditure comprised R1.7 billion for employees' remuneration and R1.1 billion for operating expenses.

The CSIR incurred irregular expenditure of R841 000 in 2022/23 and had an irregular expenditure balance of R11.8 million from prior years. This included R68 000 irregular expenditure incurred in 2021/22, which was identified in 2022/23. The total balance of irregular expenditure amounted to R12.5 million. Consequence management was implemented for the full amount of irregular expenditure incurred in 2022/23. Full value was obtained in respect of all cases of irregular expenditure. No fruitless and wasteful expenditure was incurred in 2022/23.

5.1.2. 2022/23 Performance

The CSIR's key performance indicators are structured around five strategic objectives (SO) that provide the framework on which the CSIR's strategic and operational plan is designed. These are:

SO1 - Conduct research, development and innovation of transformative technologies and accelerate their diffusion - Seeks to ensure that the CSIR undertakes cutting edge RDI in areas that will bring transformative change in the South African economy and society.

SO1 achieved four (three in 2021/22) of its five performance indicators. The CSIR signed 10 technology licence agreements against the planned 18. The target was not met due to delays in the execution of licence agreements and the loss of key resources, causing capacity restraints.

SO2 - Improve the competitiveness of high-impact industries to support South Africa's re-industrialisation by collaboratively developing, localising and implementing technology - Seeks to improve the competitiveness of South Africa's high-impact industries through research, development, and technology localisation and industrialisation in a collaborative manner with partners, thereby contributing to the reindustrialisation of the country.

SO2 exceeded performance in all three performance indicators, that is, the numbers of technologies localised, joint technology agreements implemented, and small, medium and micro enterprises (SMMEs) supported.

SO3 Drive socio-economic transformation through RDI that supports the development of a capable state - Emphasises the CSIR's role in supporting the development of a capable state and enabling the government to drive the socio-economic transformation of South Africa through RDI.

SO3 exceeded performance in all three performance indicators, that is, the numbers of reports contributing to national policy development, standards in support of the state and projects implemented to increase the capability of the state.

SO4 Build and transform human capital and infrastructure - Seeks to build and transform the required human capital and invest in infrastructure to drive industrialisation and the advancement of society.

SO4 achieved or exceeded the targeted performance in 11 of the 12 performance indicators. The CSIR increased its investment in Property, Plant and Equipment (PPE) by 55% in comparison with the previous financial year but missed the target (R259.8 million) for 2022/23 by 38% (actual investment R161.3 million) due to delays in the acquisition of equipment, as well as installation delays.

SO5 Diversify income, maintain financial sustainability and good governance - Seeks to improve the CSIR's financial sustainability by diversifying revenue sources and optimising the business model to achieve competitiveness supported by good governance.

SO5 achieved or exceeded the targeted performance in seven of the eight performance indicators. The CSIR did not meet the target to ensure that 12% (it achieved 9%) of its total income was from the

South African private sector. This was due to a significant reduction in COVID-19 diagnostic testing and lower than anticipated events at the CSIR International Convention Centre.

Overall, the CSIR achieved or exceeded 28 of the 31 (90%) key performance indicators for the 2022/23 financial year (81% in 2021/22).

5.1.3. Auditor-General's Findings on the 2022/23 Financial Statements and Performance of the CSIR

The AG awarded the CSIR an unqualified audit opinion with no findings; hence, a clean audit, for the 15th consecutive financial year. The AG further stated that no material non-compliance with the selected legislative requirements and that no significant deficiencies in internal control were identified.

The AG selected material performance indicators related to SO1: conduct RDI of transformative technologies and accelerate their diffusion, SO2: improve the competitiveness of high-impact industries to support South Africa's re-industrialisation by collaboratively developing, localising, and implementing technology and SO3: drive socio-economic transformation through RDI that supports the development of a capable state to measure the CSIR's performance on its primary mandated functions and that are of significant national, community or public interest. The AG did not identify any material findings on the reported performance information for the selected material performance indicators.

5.2. Human Sciences Research Council

The HSRC is mandated to:

- a) Initiate, undertake and foster strategic basic and applied research in human sciences. Address developmental challenges in the Republic, elsewhere in Africa and in the rest of the world.
- b) Inform the effective formulation and monitoring of policy, as well as evaluate the implementation thereof.
- c) Stimulate public debate through the effective dissemination of fact-based research results.
- d) Build research capacity and infrastructure for the human sciences.
- e) Support and build research collaboration with the people and government.
- f) Researching and analysing developmental problems.
- g) Develop and make publicly available new data sets to support research, development and public discussion.
- h) Develop new and improved methodologies for use.

The HSRC's strategic outcome-oriented goals are represented by letters forming the acronym **LeaPPT+S**, which are explained as follows:

Lea – Leadership in Knowledge Production - Contribute to addressing major developmental challenges in South Africa and on the continent.

P – Policy Influence - Demonstrate the value and impact of the knowledge it produces to forge relationships with all spheres of government, including parliament and the judiciary, in support of creating a capable state.

P – Partnerships - Contribute to developing the capabilities of South Africans by establishing itself as a trusted and engaged partner with both scientific communities and civil society.

T – Transformed Research Capabilities – Develop the required internal processes and systems; and build research capacity and transform human capital.

S – Sustainability – Secure a steady income stream; and continue to pursue a ring-fenced government allocation, especially for selected longitudinal surveys used in government planning and monitoring.

5.2.1. 2022/23 Revenue

The current financial model of the HSRC depends significantly on external funding to support research and the broader mandate of the HSRC. There is continued pressure on the HSRC to increase external income at a faster pace than the growth in its Parliamentary grant, to ensure that all necessary budget

commitments in terms of staff, administration, infrastructure and research can be met. Hence, the HSRC's view that "The declining Parliamentary grant continues to constrain, rather than facilitate the HSRC's mandate." In mitigation, the HSRC continued to review its funding strategies and explored opportunities to unlock funding as part of its shift in focus from research generation to research use.

Total revenue for 2022/23 was R765 million (R589 million in 2021/22), with the Parliamentary grant constituting R279 million, of the total revenue. The revenue collected was 148% of the budget estimated for the 2022/23 financial year, versus 109% of the budget estimated in the 2021/22 financial year. This improvement in achievement was the result of various large-scale research studies conducting fieldwork activities during 2022/23, as well as the resumption of in-person conferencing and other research-related engagements locally and internationally. These activities were mostly externally funded by local and international funders with attributed revenue reported as Research revenue. Research revenue amounted to R438 million (R280 million in 2021/22) and other operating revenue amounted to R47.6 million.

Total expenditure amounted to R765.7 million. The two largest expenditures were research expenditure at R371.7 million and staff costs at R277 million.

The HSRC incurred irregular expenditure of R28.4 million in 2022/23. The irregular expenditure related to the prior year and was due to non-compliance with supply chain management acquisition processes, quotations not stipulating local content and production, tenders advertised for less than the required number of days, and funder sub-contractor appointments without the preapproval of the National Treasury. However, value for money was achieved in respect of the reported cases, as the goods and services that were procured were received by the HSRC at the appropriate quality. Prior irregular expenditure totalling R37.6 million brought the total to R66 million, which the HSRC had asked National Treasury to condone. The HSRC incurred R2.6 million in fruitless and wasteful expenditure in 2022/23. The fruitless and wasteful expenditure related to interest on late tax payments that arose from the material irregularity (MI) identified last year and staff members' traffic fines. The money will be recovered from the staff members concerned.

5.2.2. 2022/23 Performance

The HSRC's institutional performance is divided across two programmes.

Programme 1 - Administration

The Administration Programme is responsible for the strategic direction and overall management of the HSRC.

Programme 1: Administration achieved eight of 11 performance targets. The targets for the percentage of senior researchers who are black, the percentage of senior researchers who are female, and the percentage of researchers with PhDs were not met. Underperformance was due to limitations in the pool of suitably qualified and experienced candidates; strong competition from universities, government and international employers, making it difficult for the HSRC to recruit and retain staff at these levels; and more favourable conditions of employment, including permanent appointments, available at other institutions.

Programme 2 – Research, Development and Innovation

This programme conducts basic and applied research, generating and applying knowledge that addresses and provides deeper insights into some of the challenges that society is grappling with.

Programme 2: Research, Development and Innovation achieved eight of 10 performance targets. The target of 1.1 peer-reviewed journal articles published per HSRC researcher as well as the target of 15 peer reviewed journal articles published with co-author(s) from an African country were not met. One of the contributing factors was the unpredictability of the publication process, as not all publications in the pipeline could be realised by year end. Another factor was the high volume of large-scale data collection activities undertaken during the year, which affected the capacity available towards publication efforts.

Overall, the HSRC achieved 16 (76%) (90% in 2021/22) of its 21 performance indicators.

5.2.3. Auditor-General's Findings on the 2022/23 Financial Statements and Performance of the HSRC

The AG awarded the HSRC an unqualified audit opinion with findings, an improvement on last year's qualified audit opinion. The AG identified the following material non-compliance issue:

- The financial statements submitted for auditing were not fully prepared in accordance with the prescribed financial reporting framework and supported by full and proper records, as required by Section 55(1)(a) and (b) of the PFMA.
- Material misstatements of disclosure items identified by the auditors in the submitted financial statement were corrected and the supporting records were provided subsequently, resulting in the financial statements receiving an unqualified audit opinion.

Hence, the AG found that the HSRC's Management did not in all instances exercise its responsibility to prepare accurate and complete statements that were supported and evidenced by reliable information. However, in relation to the MI that resulted in last year's qualified audit opinion, the AG found that the Accounting Authority had taken appropriate steps to deal with the MI, resulting in the recovery of financial losses. Appropriate steps were also taken to improve internal controls and processes to prevent any reoccurrence.

In relation to the performance report of the HSRC, the AG selected material performance indicators related to Programme 2: Research, Development and Innovation to measure the HSRC's performance on its primary mandated functions and that are of significant national, community or public interest. The AG did not identify any material findings on the reported performance information for the selected material performance indicators.

5.3. National Research Foundation

The object of the NRF is to contribute to national development by:

- a) Supporting, promoting and advancing research and human capacity development, through funding and the provision of the necessary research infrastructure, to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including the humanities, social sciences and indigenous knowledge (IK);
- b) Developing, supporting and maintaining National Research Facilities;
- c) Supporting and promoting public awareness of, and engagement with, science; and
- d) Promoting the development and maintenance of the national science system.

The Strategic Outcomes of the NRF are:

- Outcome 1:** A transformed, internationally competitive and sustainable research workforce;
Outcome 2: Enhanced impact of the research enterprise;
Outcome 3: Enhanced impact of science engagement; and
Outcome 4: A transformed organisation that lives its culture and values.

5.3.1. 2022/23 Revenue

The NRF derived its income from contracts (R3.2 billion) from the Department, the Parliamentary grant (R997 million), other contract income (R267 million), sales revenue (R96 million) and interest received (R61 million). The NRF's total income increased by 4.8% from R4.5 billion in 2021/22 to R4.7 billion in 2022/23. The increase of 4.5% in total expenditure (including capital expenditure) from R4.5 billion in 2021/22 to R4.7 billion in 2022/23, was mainly attributed to the receipt of additional funds to pay the Square Kilometre Array Observatory (SKAO) membership fees. Operational activities increased significantly with the lifting of COVID-19 restrictions. Decreased research funding expenditure of 7%, from R2.4 billion to R2.25 billion, was attributed to grants not taken up, mainly on the Thuthuka programme, international programmes and the DSI/Science Missions Contract, due to the restructuring of the project within the research community. Post-pandemic delays and lead times especially on equipment and infrastructure delayed spending on Research and Development Infrastructure grants. The decrease in other contract income from R351 million in 2021/22 to R267 million was due to a delay in the transfer of funds from the Department of Higher Education and Training (DHET) for the Scarce Skills Development Fund. This funding was received in April 2023. The key drivers of infrastructure expenditure were attributed to the MeerKAT extension project and

fibre rollout by the South African National Research Network (SANReN) at the South African Radio Astronomy Observatory (SARAO), the South African Research Infrastructure Roadmap (SARIR) projects at the South African Environmental Observation Network (SAEON) and the South African Isotope Facility (SAIF) at iThemba Laboratories for Accelerator Based Science (LABS). Capital expenditure decreased by R73 million in 2022/23 due to delays in the completion of the MeerKAT extension project and at iThemba LABS with delays on SAIF Phase 1 due to inclement weather and construction extensions.

The NRF ended the year with unspent funds of R10.6 million; however, these funds were fully committed against purchase orders issued before 31 March 2023.

The NRF did not incur any irregular expenditure or fruitless and wasteful expenditure in 2022/23. The Board condoned and removed R12.9 million in irregular expenditure from prior years following the implementation of the necessary corrective action and consequence management.

5.3.2. 2022/23 Performance

The NRF is organised into four programmes, which together record progress against the NRF's strategic outcomes. The programmes are:

Programme 1 - Administration – provides enabling systems and structures that support effective and efficient governance, strategy and planning capacity, and shared services.

Programme 2 - Science Engagement - leads and coordinates the discourse on science with and for society.

Programme 3 - Research and Innovation Support and Advancement (RISA) - supports and promotes research through the development of human capacity, the generation of knowledge, and the provision of, and access to, cutting-edge research infrastructure.

Programme 4 - National Research Infrastructure Platforms (NRIP) - provides leading-edge research infrastructure platforms, in the thematic areas of nuclear sciences; biodiversity and environmental sciences; astronomy and geodetic sciences; and supports other evolving research infrastructure platforms, in support of knowledge generation, innovation and human capacity development.

Overall, the NRF achieved or exceeded eight of its 10 (80%) performance targets for 2022/23, compared to 72% performance achievement in 2021/22.

The two targets that were not achieved related to not earning the targeted foreign income derived from activities at the National Research Facilities, and not generating the targeted number of patient doses from radioisotopes produced by iThemba LABS. The underperformance was predominantly linked to the operations of iThemba LABS, which heavily depends on the stability of power supply and are subject to changes in the market for medical isotopes. However, actual performance for both indicators showed a significant growth from the prior year. In 2023/24 the following actions will be taken to improve performance of these indicators:

- The UPS Unit 3 generator is currently undergoing recommissioning after which more power (in the order of 1 100 kVA) should be restored to mitigate disruptions in the power supply.
- The completion of the new 70 MeV Cyclotron is expected to significantly lower operational pressure on the Separated Sector Cyclotron (SSC) in the long term.

5.3.3. Auditor-General's Findings on the 2022/23 Financial Statements and Performance of the NRF

The AG awarded the NRF an unqualified audit opinion with no findings; hence, a clean audit, for the 4th consecutive financial year. The AG further stated that no material non-compliance with the selected legislative requirements and that no significant deficiencies in internal control were identified.

The AG selected material performance indicators related to Programme 3: Research and Innovation Support and Advancement and Programme 4: National Research Infrastructure Platforms to measure the NRF's performance on its primary mandated functions and that are of significant national, community or public interest. The AG did not identify any material findings on the reported performance information for the selected material performance indicators.

5.4. South African National Space Agency

The legislative mandate of SANSA is premised on two primary Acts; namely, the Space Affairs Act (No. 84 of 1993) and the South African National Space Agency Act (No. 36 of 2008). The former, an instrument of the Department of Trade, Industry and Competition, caters for the regulatory/policy context for the South African space programme; whereas the latter, an instrument of the Department, enables the establishment of SANSA as an implementing agency for the South African Space Programme. The National Space Strategy and the South African Earth Observation System (SAEOS) Strategy provide edicts that directly inform the operationalisation of the South African Space Programme, inclusive of the role that SANSA should play.

5.4.1. 2022/23 Revenue

Total revenue amounted to R351.8 million (R332.8 million in 2021/22) and comprised Transfers and grants of R208.8 million, revenue from rendering services of R131.6 million, interest of R9.8 million and other income of R1.6 million. Total expenditure amounted to R341.6 million, leaving a R10.3 million (R34 million in 2021/22) surplus. Given the technical nature of SANSA's work, employee related costs remained a key cost driver and amounted to R158.7 million in 2022/23.

In relation to underspending:

- Under expenditure by Programme 2: Earth Observation was mainly due to grant related expenditure that was below budget by R27.5 million because of delayed grant funding that was either pending or received towards the end of the year. In addition, data license costs were below budget by R6.5 million due to lower customer demand that resulted in fewer licenses being acquired.
- Under expenditure by Programme 3: Space Science was mainly due to lower spending under repairs and maintenance of R4.2 million, where work was mostly committed for towards the end of the financial year and into 2023/24. The Programme also had underspending of R7 million under consulting services. Furthermore, research grant expenditure was below budget by R3.6 million due to the impact of the COVID-19 pandemic on research activities internationally and the resultant postponement of some in-person events.
- Underspending by Programme 4: Space Operations was mostly due to projects that were completed after year-end.

Infrastructure projects that were initiated and/or completed in 2022/23 included:

- Proposals submitted for the Space Infrastructure Hub.
- Completion of the Space Weather building, onsite accommodation, and Generator House at SANSA Hermanus.
- Establishment of the 24/7 operational Space Weather Centre.
- The extension of the student residence at SANSA Hermanus.
- The funding for the Matjiesfontein ground segment for NASA's Deep Space Network was secured and received in March 2023 for implementation in 2023/24.

In 2022/23, SANSA did not incur any irregular, or fruitless and wasteful expenditure.

5.4.2. 2022/23 Performance

The Space Agency's performance is measured against the following six Strategic Outcomes. Performance against these outcomes is accomplished through SANSA's five programmes; namely, Administration, Earth Observation, Space Science, Space Operations and Space Engineering.

Outcome 1: Increased –space relevant knowledge that supports the developmental agenda.

- Outcome 2:** Growth of the space sector through SANSA space related industry expenditure.
- Outcome 3:** Increased human capacity for the implementation of key space initiatives.
- Outcome 4:** SANSA positioned as a key enabler of government's space-related policies.
- Outcome 5:** Appropriate infrastructure developed to support the local space sector.
- Outcome 6:** Increased market share of the global space operations market.

For 2022/23, SANSA's performance was measured against 20 performance indicators, where 17 indicators were achieved, resulting in an annual performance of 85% (94% in 2021/22 and 82% in 2020/21). The three performance targets that were not met were:

- Percentage implementation of the Audit Action Plan: SANSA prioritised the resolution of audit findings throughout the reporting period with 69% of the planned actions having been implemented against the targeted 95%. This continues to be a critical area of focus for SANSA.
- Development of the Space Infrastructure Hub – The finalisation of the contracting for the acquisition of the Phase-1 mission system was not concluded and implementation of this project will continue in the 2023/24 financial year.
- Percentage progress towards an upgraded Assembly, Integration and Testing (AIT) Facility; namely, Houwteq. The delayed transfer of the Houwteq AIT facility from Denel to SANSA continued to negatively impact the upgrade of the facility. However, Denel confirmed its decision to transfer the Houwteq AIT facility and Spaceteq capability, inclusive of all intellectual property and artifacts to SANSA. Transfer negotiations and discussions for SANSA to secure early access to the Houwteq AIT facility are ongoing.

Key events that will affect SANSA's operations include:

- SANSA Hermanus was declared a National Key Point on 23 December 2022. The promulgation of regulations for the Critical Infrastructure Protection Act (CIPA) will impact the Hartebeesthoek and Hermanus sites as National Key Points are to be moved to the CIPA.
- The Department of Trade, Industry and Competition is in the process of revoking and replacing the Space Affairs Act, which will only be realised in the next year or two. The Space Affairs Act will be replaced with a South African Industry Regulation Act, which seeks to reduce the liability/vulnerability of the State. Once assented to, it will have implications on the licencing requirements for SANSA. Among other requirements, SANSA will have to apply for a licence for its facilities, to register with the regulatory body and have insurance for space missions.

5.4.3. Report of the External Auditor on the 2022/23 Financial Statements and Performance of SANSA

The 2022/23 financial year was the first year that 2A Kopano Incorporated audited the financial statements and performance report of SANSA. The Space Agency maintained its unqualified audit opinion, with no findings (clean audit) for a 2nd year. The auditor further stated that no material findings on compliance with key legislation and that no significant deficiencies in internal control were identified.

In relation to the performance report, the auditor selected Programmes 2, 3 and 4 for the assessment. The auditor identified a material misstatement in the reported performance information of Programme 2: Earth Observation, indicator 1.1.1 (National research productivity score for supported R&D). Management subsequently corrected the misstatement, and no material findings were included in the auditor's report.

5.5. Technology Innovation Agency

The TIA is mandated to translate a greater proportion of publicly funded research into commercial technology products and services. Hence, the TIA was established to promote the development and utilisation, in the public interest, of discoveries, inventions, innovations and improvements. The objective of the TIA is to support the state in stimulating and intensifying technological innovation to improve economic growth and the quality of life for all South Africans.

A critical review of the TIA's execution of its core mandate revealed that it has supported many innovations. However, the translation and commercialisation success rate has been suboptimal. As a

result, the TIA aims to direct a greater proportion of its resources towards the translation and commercialisation of publicly financed intellectual property (IP) emanating from higher education institutions and science councils.

The TIA's 2020-2025 strategic focus hinges on three core pillars/outcomes:

Commercialising innovations – The TIA has a significant portfolio of de-risked, early-stage technologies for investors to commercialise.

For the period 2020/21–2022/23, the TIA introduced 136 technological innovations into the market against a three-year target of 80 and looks set to achieve its five-year target of 175 by the end of 2023/24.

Delivering on the Bioeconomy Strategy by targeting the Health, Indigenous Knowledge (IK), Agriculture and Industrial Biotechnology sectors – The Bioeconomy contributes significantly to South Africa's GDP.

For the period 2020/21–2022/23, the TIA supported 110 bio-based technologies, products or services compared to the five-year target of 75. Over the same period, the TIA did not achieve its target of having 335 bio-based entrepreneurs and organisations access high-end science, engineering and technology (SET) support, recording only 277 during this period.

Increasing the participation of entrepreneurs, innovators, cooperatives and SMMEs in technological innovation - Providing access to key infrastructure capabilities such as the strategically informed and regionally distributed Technology Stations and other innovation-enabling interventions.

For the period 2020/21–2022/23, the TIA supported 7 828 SMMEs against a target of 8 790. Hence, the TIA is at risk of not achieving its five-year target of 15 750 but will strive to achieve 90% (14 715) of the target.

5.5.1. 2022/23 Revenue

The TIA's total revenue for 2022/23 amounted to R748.8 million, with the Parliamentary grant constituting R458.4 million of this total. Total expenditure for the year amounted to R742 million (R6.2 million surplus), which was R92.8 million higher than budgeted for. This was largely due to a higher than projected investment expenditure on specific programmes of R91 million.

Total disbursements to projects totalled R572 million, which was 19% higher than budgeted for. These comprised R97.5 million for the Commercialisation division, R242.5 million for the Bioeconomy division and R232 million for the Innovation Enabling division. The TIA had dispersed, for the 4th consecutive financial year, more than 90% of its MTEF allocation.

In relation to the Innovation Fund, R34.5 million was disbursed against project milestones (R18.9 million against Phase 1 and R15.5 million against Phase 2). To date (i.e., from the commencement of the Innovation Fund until 31 March 2023) R91.6 million was disbursed against project milestones (R76.1 million against Phase 1 and R15.5 million against Phase 2). A total of R41.4 million was disbursed to Bioeconomy-related projects and R37.9 million to Commercialisation-related projects. In 2022/23, R36.3 million (including R11 million specifically contracted with the DSI) was invested in the Seed Fund portfolio.

The TIA significantly improved its efficiency ratio from 28% in 2021/22 to 13.7% in 2022/23, against a target of 15%.

The TIA incurred irregular expenditure of R4.5 million due to one contract (R143 750) being signed outside the Delegation of Authority, and incurring expenditure of R961 021 and R3.4 million for another company without having any agreement in place or the necessary approval for the expenditure. The TIA did not incur any fruitless and wasteful expenditure in 2022/23.

5.5.2. 2022/23 Performance

For 2022/23, the TIA's performance was measured against 18 performance indicators, where 17 indicators were achieved, resulting in an annual performance of 94% (86% in 2021/22 against 22

performance targets). The TIA achieved all its performance targets for Outcomes 1 to 3. The performance target that was not achieved was an administration-related target:

- The TIA sought to reduce the time it takes to assess and provide investment decisions for funding applications of less than R1 million to 4-weeks. However, for 2022/23, only 52% (48) of the 93 applications received were assessed within this timeframe.

In relation to selected targets servicing the core mandate, the TIA met or exceeded performance targets in terms of the number of technologies commercialised, bio-based technologies developed, technologies diffused for inclusive development, products launched, funds leveraged, SMMEs and cooperatives supported, and postgraduate students and post-doctoral fellows supported.

5.5.3. Report of the External Auditor on the 2022/23 Financial Statements and Performance of TIA

The external auditor, Rakoma and Associates Incorporated, awarded the TIA an unqualified audit opinion with material findings (previous three financial years – clean audits) on compliance with legislation in that the submitted financial statements contained material misstatements, which were corrected during the audit. The findings in this regard were:

- The financial statements submitted for auditing were not supported with full and proper records, as required by sections 55(1)(a) and (b) of the PFMA. Material misstatements of non-current assets, current assets, expenditure, and disclosure items identified by the auditor in the submitted financial statements were corrected and supporting records were subsequently provided, resulting in the financial statements receiving an unqualified audit opinion.
- Effective and appropriate steps were not taken to prevent irregular expenditure of R4.5 million as disclosed in Note 30 to the Annual Financial Statements, as required by section 51(1)(b)(ii) of the PFMA.

Hence, the auditor found that Management did not implement adequate internal controls to ensure compliance with laws and regulations as material misstatements were identified in the financial statements submitted for audit. In addition, Management did not adequately monitor compliance with laws and regulations to prevent instances of non-compliance. This was evidenced by the irregular expenditure incurred.

For the audit of the annual performance report, the auditor selected the Commercialisation and Bio-economy Programmes. The auditor did not identify any material findings in relation to the reported performance.

6. OVERVIEW OF PERFORMANCE

The 2023 South African Science, Technology and Innovation Indicators Report produced by the National Advisory Council on Innovation (NACI) provides data and information relating to various aspects of South Africa's STI landscape. This report draws on a variety of information sources and offers the following insights:

- Gross expenditure on R&D (GERD) as a percentage of GDP declined from 0.76% in 2017/18 (peak) to 0.61% in 2020/21. Business-sector expenditure on R&D has been declining for the past decade and contributed approximately 30% to GERD in 2020/21, down from 47% in 2011/12.
- Efforts to increase academic staff with doctoral degrees are unlikely to meet the 75% target set for 2030.
- Despite various initiatives over the years to increase the number of SET graduates (only 29% of the total), the percentage of SET graduates has not increased significantly. However, since 2015, the relative percentage of female doctoral graduates in the Science, Technology, Engineering and Maths (STEM) fields surpassed those of male graduates and there has also been an increase in black doctoral graduates.
- The percentage of academic staff in STEM fields has only increased from 51.5% in 2010 to 51.9% in 2021.

- South Africa has witnessed a significant rise in scientific publications, with its world share around 1%, increasing from 3 693 in 2000 to 27 052 in 2021.
- Domestic patents increased from 2005 to 2021 but remains lower than a decade ago.
- In 2021, the sale of South African intellectual property (IP) increased compared to the previous year, but South Africa's share of receipts has significantly and consistently declined compared to all middle-income countries – dropping from 3.3% in 2016 to 0.8% in 2021. Payments abroad for the use of IP have also decreased since 2017. While there was an increase in payments abroad for the use of IP in 2021, it followed two years of decline and was still significantly lower than any year in the decade preceding 2018.
- After a period of growth in the total number of researchers (by headcount), there has been a downward trend since 2018/19 (from 36 233 in 2017/18 to 34 072 in 2021/22). Researchers in Science councils have been declining since 2017/18, from 2 189 researchers in 2016/17 to 1 774 researchers in 2020/21.

The Department, its entities and partners have implemented several initiatives to address the challenges around resources, skills development, the expansion of the STI system, and deriving greater socio-economic benefit from the current investment in STI. Hence, for 2022/23, the following selected performance achievement is notable:

- Through the STI Public Budget Coordination Mechanism, STI priorities have been included in the 2024/25 National Guideline for the assessment of draft Strategic and Annual Performance Plans. The Department will participate in the assessment of departmental plans before they are tabled in Parliament. Furthermore, to fully integrate STI planning and budgeting in the development of these plans, a study of best practices in budget tagging for STI has been proposed. This will ensure that national, provincial and local departments purposefully set aside appropriate percentages of their budgets for STI.
- For the period 2019/20 to 2021/22, the Department has, on average, achieved 89% of its 2019-2024 MTSF performance targets.
- The CSIR's television white spaces technology brings affordable broadband internet to rural and township communities by bridging the digital divide. The CSIR empowered 13 youth- and women-owned SMME network operators to deploy broadband infrastructure. Deep rural communities across multiple provinces now have access to affordable broadband connectivity, empowering economic growth and digital inclusion.
- The CSIR developed a digital solution (app) to streamline the reporting and maintenance of road infrastructure issues in Gauteng. Motorists now benefit from improved road safety and reduced vehicle damage due to efficient reporting and resolution of signal failures and potholes, etc.
- The CSIR has developed a Master Learning Factory to facilitate the development of skills of the future through a workplace skills programme, as well as influence the TVET colleges curriculum in the fourth industrial revolution (4IR). Currently, 97 interns are supported within the CSIR, and 304 interns have been supported since the inception of the programme in 2018/19.
- The HSRC launched its Election Indicators Report Series at the Independent Electoral Commission (IEC) Gauteng Research Seminar in March 2023. The research provides evidence on the changing election-related attitudinal and behavioural predispositions of the South African public.
- Through its focus on women, youth and persons with disabilities, the HSRC hosted a seminar on "How South African Youth Generate Livelihoods." The seminar explored what South African youth are already doing to generate meaningful livelihoods, rather than continuing to frame the youth unemployment debate through deficits – a lack of skills, employment and experience.
- The HSRC and the Oppie Bol Foundation held the inaugural National Disability Awareness Conference (NDAC) in Pretoria, which was titled: Shaping Accountability and Commitment in Mainstreaming Disability. The conference brought together individuals, corporates, government, disability-owned businesses, and affiliates to discuss the workplace and marketplace where people with disabilities should be fully included as professionals, customers, and entrepreneurs.
- In relation to skills development and research support offered by the NRF, 2 359 doctoral students (exceeded by 159) and 4 754 (exceeded by 554) pipeline postgraduate students were awarded bursaries; 1 652 (exceeded by 1 352) emerging researchers and 614 (exceeded by 414) black and female emerging researchers were awarded research grants. In terms of experiential learning, 1 057 (exceeded by 307) graduates and students were placed in work preparation programmes at SET institutions. Furthermore, 3 321 (exceeded by 321) established

researchers were awarded research grants. The researchers supported by the NRF, published 7 273 internationally accredited research articles in 2022/23.

- The NRF's bid to host the Africa Future Earth Secretariat Hub was approved in April 2022 by the Future Earth Governing Council. The Africa Hub joins eight global secretariat hubs; namely, Canada, China, France, Japan, South Asia, Sweden, Taipei, and the United States. The University of Pretoria and Rhodes University have been confirmed as the host of the Africa Hub Leadership Centre.
- The SAIF infrastructure at iThemba LABS was completed and commissioned. iThemba LABS is the global sole supplier of certain medical isotopes, and therefore has a substantial international reach. It also supplies South African nuclear medicine clinics with the medical isotopes used for the treatment of cancer.
- Through the Joint Marine Laboratory Programme, the South African Institute for Aquatic Biodiversity is building research laboratories at four HDIs. This new infrastructure will enable these HDIs to produce a new generation of marine scientists. The programme also supports knowledge generation by these Universities.
- The MeerKAT radio telescope team received the 2023 Group Achievement Award from the Royal Astronomical Society, furthering radio astronomy in Africa.
- The Space Agency completed the Space Weather building and launched the 24/7 operational Space Weather Centre in Hermanus, Western Cape. SANSA Hermanus was also declared a National Key Point.
- The Space Agency and NASA broke ground on the new Deep Space Network ground station in Matjiesfontein in the Western Cape.
- The TIA significantly increased the proportion of its budget that was disbursed to publicly funded beneficiaries, from 57% in 2020 to 74% in 2022/23, and exceeded its planned support to underserved provinces and transformed investees.
- The TIA commercialised 61 technologies, launched 43 products, leveraged R600 million in investment funds, supported 2 903 SMMEs and cooperatives, developed 37 bio-based technologies and added 37 innovators to the Grassroots Innovation Programme.

Notwithstanding their achievements and the progress made in respect of national priorities, the Department, its entities and the NSI remains underfunded. The sub-optimal level of funding has limited the scope and impact of many of the initiatives aimed at increasing the size, coherence and effectiveness of the NSI, as required by the NDP, as well as efforts to ensure greater inclusivity, representation and higher rates of transformation, since the scale of these initiatives are defined by the available budget and not by the need it seeks to address. The sub-optimal level of funding for all entities has also compromised the full implementation of mandates and created capacity challenges as high-level skills seek better/more secure employment elsewhere. Hence, it is anticipated that the STI Public Budget Coordination Mechanism will alleviate some of the funding pressures by increasing the amount of public funding available for STI. It is also hoped that the co-creation of the Skills and Innovation Compact under the auspices of the Inter-Ministerial Committee on STI will see greater, directed action in relation to the development of the skills needed by the economy, and realise the "whole-of-government approach" to innovation as advocated for by the 2019 White Paper on STI.

In addition to the funding challenges, the following challenges were also reported:

- Loadshedding is negatively affecting the operations of the entities and the extended research infrastructure facilities, and the cost to mitigate this is further constraining already insufficient budgets.
- The needed high-level skills and capabilities are in short supply in the market and industry, negatively affecting business priorities. Furthermore, budget constraints and the location of some facilities, makes it difficult to attract and/or retain the needed skills.
- The increased cost of doing business negatively affects the financial sustainability of the entities.
- The challenges around contracting with government and state-owned enterprises for mandated work continues.

The Department and its entities spent more than 95% of their allocated funds and achieved, on average, 85% of their performance targets. However, the declines in performance by the Department, HSRC and SANSA are cause for concern. The Department and its entities also reported that they were on track to achieve more than 80% of their 2019-2024 MTSF targets and 2020-2025 Strategic

Plan targets. Performance targets that were not achieved were mainly due to the constrained innovation and technology system, as well as its inherent uncertainty; the inherent uncertainty in R&D processes; capacity challenges around the availability of high-level skills; and factors that were outside the control of the Department and the entities.

In relation to the 2022/23 audit, the audit outcomes of the Department, CSIR, NRF and SANSA remained unchanged with unqualified audits with no findings (clean audits). The HSRC improved from a qualified audit opinion to an unqualified audit opinion with findings. Unfortunately, the TIA regressed from a clean audit to an unqualified audit with findings. Irregular expenditure (CSIR, HSRC and TIA) amounted to R33.7 million; however, full value was obtained in all cases identified as irregular expenditure since the goods and services that were procured were of the appropriate quality. Only the HSRC incurred fruitless and wasteful expenditure, and at R2.6 million the amount was significantly higher than last year's total fruitless and wasteful expenditure of R31 000 for the science and innovation portfolio. However, the HSRC Board Chairperson informed the Committee that these monies were not lost and that the full amount had been recovered from the employees concerned.

With Cabinet's adoption of the final 2022-2032 STI Decadal Plan in November 2022, and the STI governance structures proposed by the 2019 STI White Paper now in place, full attention can be directed to ensuring that STI agenda setting, planning and budgeting are integrated at the highest levels of government planning so that South Africa realises the intended impact from its investment in STI.

7. COMMITTEE OBSERVATIONS

The Committee commended the Department and the entities for their efforts in delivering on some of the key areas for social and economic development in line with the goals of the NDP and within acute financial constraints. Therefore, having considered the planning documents and the performance of the Department and its entities, the Committee's observations highlight some of the key areas emanating from the interactions with the Department and its entities, which require further attention and discussion.

Department of Science and Innovation

The Committee:

- 7.1.** Commended the Department for retaining its clean audit and noted that because the Department was generally well managed it could direct greater attention to interrogating the performance achievement and the impact of this achievement on the lived realities of South Africa's citizens.
- 7.2.** Noted the input of the AGSA around the continuous tracking of the commitments made by the Department and its entities to improve on the shortcomings that were identified during the audit process.
- 7.3.** Reiterated that the Department needed to ensure that its oversight of the entities addressed the findings raised by the AGSA and that planned performance was aligned to the needs of the country. Hence, the Committee resolved to monitor the support provided by the Department to assist the entities in this regard.
- 7.4.** Noted the ongoing challenge around the filling of vacancies in the Department, and expressed concern that this will be exacerbated by the cost saving measures proposed by National Treasury.
- 7.5.** Expressed concern about the decline, from 92% to 80%, in the Department's performance achievement, especially around support opportunities for UoT and TVET graduates and the development of high-level skills in niche areas. The Committee accepted the Department's reasons for their decline in performance, as well as the commitment to ensure that these issues are addressed.
- 7.6.** Stated that the full implementation of the STI Decadal Plan, now that it has been finalised, will hopefully address areas of underperformance in the future.
- 7.7.** Welcomed the overachievement of several performance targets, especially around the investment and support granted to SMMEs, the support granted to students and researchers, and the commercialisation of technologies and products. However, the Committee questioned the thoroughness of the Department's planning processes around target setting.

- 7.8. Noted that the Department spent 99.7% of its budget and achieved 80% of its performance targets. Hence, the Committee stated that the Department should better consider how its performance and budget are linked.
- 7.9. Welcomed the increased investment in youth- and women-owned technology enterprises, as well as black women researchers. The Committee reiterated that the Department and its entities must be intentional in their efforts to ensure inclusivity, transformation and representation, especially in relation to gender and people with disabilities, and that adequate funding and coherent planning must support these performance targets.
- 7.10. Welcomed the finalisation of the Astro Tourism Strategy and that the implementation plan for this Strategy was being developed and would feed into the next 5-year Strategic Plan of the Department.
- 7.11. Acknowledged the difficulties as explained by the Department and its entities around the commercialisation of locally developed technologies and products and agreed that this issue needs considered attention.
- 7.12. Expressed concern around the low uptake of innovations designed to improve service delivery, as these innovations could bring positive change to the communities that need it the most. Therefore, the Committee encouraged the Department to expand its efforts in relation to the District Development Model and to ensure that these efforts are adequately coordinated and supported by key stakeholders, such as the South African Local Government Association.
- 7.13. Noted that the budget allocations of the Department and its entities are inadequate to fulfil the relevant mandates, which seek to facilitate inclusive economic growth and socio-economic development, promote environmental sustainability, support R&D-driven industrialisation, support the development of needed human capital and infrastructure and improve service delivery and government decision making.
- 7.14. Noted the continuing decline in the gross investment in R&D as a percentage of GDP, as well as the decline in business expenditure on R&D. The Committee anticipates that the STI Public Budget Coordination Mechanism will help to address some of the funding challenges in the science and innovation portfolio.
- 7.15. In relation to lessening the effects of loadshedding, the Committee wished to see the science and innovation sector create stability in the energy arena by supporting the government in bringing about energy sustainability.

Entities – CSIR, HSRC, NRF, SANSA and TIA

The Committee:

- 7.16. Noted that there has been a huge cohort of new leadership across the entities. The Committee expressed their approbation for the guidance provided and for honouring the recommendations of the Committee.
- 7.17. Commended the CSIR, NRF and SANSA for retaining their clean audits and welcomed the improvement in the audit outcome of the HSRC. The Committee expressed concern regarding the regression in the audit outcome of the TIA.
- 7.18. Noted the input of the AGSA around the continuous tracking of the commitments made by the entities to improve on the shortcomings that were identified during the audit process. The Committee; therefore, resolved to strengthen its oversight of the implementation of the audit action plans, especially those of the HSRC and the TIA.
- 7.19. Noted the irregular and fruitless and wasteful expenditure that was incurred and expressed satisfaction that the necessary investigations were undertaken, and that consequence management was implemented in all cases concerned. The Committee was also satisfied that the entities obtained the full value of the goods and services that were procured, and that the fruitless and wasteful expenditure had been recovered from the employees concerned.
- 7.20. Acknowledged that the entities maintained their good performance and that this reflected their consistent, hard work. However, areas of underperformance across the entities and the factors that led to the underperformance were noted. The Committee accepted the reasons provided but cautioned that these be addressed to avoid underperformance in the future.
- 7.21. Welcomed the overachievement of several performance targets across the entities, but as with the Department, questioned the thoroughness of the planning processes around target setting.

- 7.22. Noted that, due to funding constraints and the inability to offer market related salaries and service benefits, the science councils were struggling to retain highly skilled science, technology, engineering, mathematics and innovation (STEMI) staff, affecting the performance of the entities. Therefore, the Committee welcomed the plans by the CSIR, HSRC and SANSA to support the development of the needed skills, as well as to attract and retain the needed STEMI staff.
- 7.23. Welcomed the initiatives that seek to address the skills needs of the future, especially the efforts to include HDIs and TVETs. The Committee also welcomed the implementation of the DSI/CSIR Foundational Digital Skills Programme that seeks to build and advance digital 4IR-related R&D skills in South Africa.
- 7.24. Noted the continued negative impact of the public procurement regulations on the ability of the entities to earn contract income from the public sector.
- 7.25. Noted that loadshedding is negatively affecting the operations of the entities and their extended research infrastructure facilities, and that the cost to mitigate this is further constraining already insufficient budgets.
- 7.26. Noted the challenges around maintaining and upgrading existing research infrastructure and welcomed the strategic approach of the entities to prolong, despite funding challenges, the lifespan of existing infrastructure. The Committee acknowledged that these efforts require significant long-term investment.
- 7.27. Expressed concern around the effect the proposed austerity measures will have on the entities and their ability to effectively execute their mandates.
- 7.28. Commended the CSIR on the technologies that it had developed, especially the digital solution (app) to streamline the reporting and maintenance of road infrastructure issues in Gauteng. The Committee stated that it was this type of locally developed technology that should see wide-spread uptake across South Africa, and the frameworks to ensure this must be addressed and improved on. Hence, the Committee commended the CSIR for working with the South African National Roads Agency SOC Ltd to ensure that this technology is rolled-out across all the provinces.
- 7.29. Welcomed the news that the CSIR had found a new partner to commercialise its three-dimensional (3D) printer for metal components used in the commercial aerospace manufacturing sector, as well as the power generation, automotive tooling, defence and manufacturing sectors.
- 7.30. Acknowledged and appreciated the efforts of the HSRC Board and Executive to resolve all but one of the MIs identified by the AG and stated that this is clear evidence that the accountability system is intact and operating effectively. The Committee will continue; however, to monitor the resolution of the remaining MI.
- 7.31. Congratulated the NRF/MeerKAT radio telescope team for receiving the 2023 Group Achievement Award from the Royal Astronomical Society.
- 7.32. Acknowledged that more students and researchers were supported than planned, but expressed concern that the NRF was still only able to fund approximately 35% of qualifying applications for postgraduate bursaries. The NRF estimated that last year it needed a further R2.2 billion to fund the needs of qualifying students and researchers.
- 7.33. Noted with concern that the funds from the Department of Higher Education and Training for the Scarce Skills Development Fund was delayed and only received in April 2023.
- 7.34. Welcomed the efforts of the NRF to secure funding from industry and the private sector for postgraduate bursaries, especially since it received less funding from the National Skills Fund, which declined from R250 million to R150 million.
- 7.35. Expressed concern that two Deputy Chief Executive Officers of the NRF were placed on suspension. The Committee was; however, assured that internal arrangements were instituted and that operations were not negatively affected. Furthermore, the investigation pertaining to this issue will be finalised in the next two months.
- 7.36. Commended SANSA for their efforts to increase the number of additional government departments and public entities that use space products and services to enhance service delivery and inform decision making and planning.
- 7.37. Welcomed that SANSA Hermanus had been declared a National Key Point. The Committee hoped that this would allow its operations, both in Hermanus and in Hartebeesthoek, which is already a National Key Point, to be exempted from loadshedding, which is costing SANSA R1.2 million per month to mitigate.
- 7.38. Welcomed that the new Space Weather Centre was fully operational.

- 7.39. Welcomed that the planned upgrades of the Houwteq AIT facility had now commenced since this facility was critical to the National Space Programme, especially for the satellite build programme and for the growth of the local space industry.
- 7.40. Noted that SANSA's Space Engineering Programme was identified as a key risk to the organisation, mostly due to the lack of key skills, especially in systems engineering. In mitigation, SANSA is looking to streamline its available systems engineering capability across all programmes, while it tries to recruit the needed skills.
- 7.41. Noted the delay in the release of the allocated funds for the Space Infrastructure Hub and that SANSA has now fulfilled the requirements stipulated by National Treasury. SANSA is currently waiting for National Treasury's response in this regard.
- 7.42. Noted that the need to build indigenous space launch capability is critical not only for the local space industry but also to service the global space sector, since local space capability is not enough to sustain the local space industry. This; however, is highly capital intensive and the Space Infrastructure Hub requires approximately R3.5 billion over the next 10 years, including R1.6 billion over the current MTEF.
- 7.43. Commended the presentation of the TIA in that it linked the performance targets with the work supported and provided evidence of the impact achieved. In future, the Committee will consider having the beneficiaries of the TIA's support present their innovations to the Committee.
- 7.44. Noted the funding relationships forged between the TIA, academia and industry, since partnering with industry has been shown to improve the likelihood of market success.
- 7.45. Welcomed that its recommendation to expand the Technology Stations Programme to TVETs was receiving considered attention in that the Department has appointed a service provider to cost such a model. Furthermore, efforts to optimise the existing Technology Stations was also receiving attention.
- 7.46. Noted that the TIA does track the innovators and innovations it supports post-commercialisation to gauge whether it can continue to assist to broaden the market access and reach of these innovators and innovations.
- 7.47. Welcomed the efforts of the TIA to actively leverage funds from government departments struggling to deliver services so that these funds can be used to source solutions from local and grassroots innovators.
- 7.48. Welcomed that the TIA's Board has now approved a programme to specifically support women, youth and persons with disabilities in the innovation space, as the TIA's investment in underserved provinces and in relation to transformation, needs considerable improvement.
- 7.49. Noted the achievements under the Innovation Fund and its effort to transform the venture capital space and empower black fund managers.

8. RECOMMENDATIONS

The Portfolio Committee on Higher Education, Science and Innovation recommends that the:

- 8.1. The Minister of Higher Education, Science and Innovation (the Minister) and the Department exercise their direct oversight function over the entities more diligently, especially the HSRC and the TIA, to ensure compliance with the requisite governance and legislative prescripts, and the resolution of all outstanding commitments on the respective audit action plans.
- 8.2. The Minister continues his efforts with the National Treasury around the STI Public Budget Coordination Mechanism to secure additional funding for the science and innovation portfolio.
- 8.3. The National Treasury, cognizant of the need for the country to grow its technological capabilities to enhance its competitiveness, exempts the science and innovation portfolio from any proposed budget cuts.
- 8.4. The Minister continues to engage the National Treasury on a review of the procurement regulations that hinder science councils from contracting with government and state-owned enterprises, especially around mandated functions for which these science councils receive public funds to develop and deploy capability in the interest of the state.
- 8.5. The Department and its entities review their target setting in instances where significant overachievement was recorded, and where new baselines can be set for greater achievement, these should be implemented.
- 8.6. The Minister and the Departments of Science and Innovation, and Higher Education and Training continue to align and enhance their plans around skills development, coordination

and support; as well as around plans to ensure that critical skills are developed, retained and supported.

- 8.7. The Minister, Departments of Science and Innovation, and Higher Education and Training and the entities continue to enhance support for HDIs and TVET colleges to ensure not only greater inclusion and participating of these institutions in the NSI, but also to accelerate the transformation agenda.
- 8.8. The Minister, the National Treasury and SANSA resolve the issues around the release of the funds allocated to the Space Infrastructure Hub since this is crucial for the development of high-level technological capability.
- 8.9. The Department and its entities reflect on the linkages between their budgets and performance since most of the budgets were spent but performance averaged around 85% for the Department and its entities.
- 8.10. The Department, CSIR and the TIA compile a comprehensive written report on the challenges around the commercialisation of locally developed technologies and publicly funded intellectual property, inclusive of the existing government policies and programmes that seek to support these efforts, the available funding and the limitations of these. The report should also include possible solutions to address the challenges. The Committee resolves to arrange a specific engagement on this issue in 2024.
- 8.11. The Department and its entities should lead in how to cost effectively and with due regard for the Just Energy Transition, mitigate the negative effects of loadshedding on their operations.
- 8.12. The Department and its entities should continue to explore mechanisms to better track and report on the impact of the investment in STI, despite the complexities associated with measuring and defining STI impact, so that the relevance of this investment is better understood and appreciated. For example, how has the intellectual property generated from public funds led to job creation or the establishment of new businesses? These mechanisms should also attempt to estimate the “potential loss of impact” due to the current inadequate resourcing of the NSI. Furthermore, future presentations to the Committee should use the TIA’s presentation on its 2022/23 Annual Report as a guide.

The Minister and the Department should ensure that where the recommendations call for the submission of written reports, these should be submitted to the Committee within four months from the adoption of this report by the National Assembly.

The Democratic Alliance reserved their opinion on the Budgetary Review and Recommendation Report.

Report to be considered.