BUDGETARY REVIEW AND RECOMMENDATION REPORT OF THE PORTFOLIO COMMITTEE ON SCIENCE, TECHNOLOGY AND INNOVATION ON THE PERFORMANCE OF THE DEPARTMENT OF SCIENCE AND INNOVATION FOR THE 2023/24 FINANCIAL YEAR, DATED 22 OCTOBER 2024

The Portfolio Committee on Science, Technology and Innovation, having considered the performance of the Department of Science and Innovation and its entities, the Academy of Science of South Africa, Council for Scientific and Industrial Research, Human Sciences Research Council, National Advisory Council on Innovation, National Research Foundation, South African Council for Natural Scientific Professions, South African National Space Agency and the Technology Innovation Agency for the 2023/24 financial year, reports as follows:

1. INTRODUCTION

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

The Constitution of the Republic of South Africa, 1996 and the Rules of Parliament mandates the Portfolio Committee on Science, Technology and Innovation (hereafter, the Committee), 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 2024 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 2023/24 Annual Performance Plans, budget allocations, quarterly performance and expenditure trends, and conducted oversight by having briefings on specific initiatives and programmes. From 8 to 11 October 2024, the Committee considered the 2023/24 Annual Reports of the Department, Academy of Science of South Africa (ASSAf), Council for Scientific and Industrial Research (CSIR), Human Sciences Research Council (HSRC), National Advisory Council on Innovation (NACI), South African Council for Natural Scientific Professions (SACNASP), South African National Space Agency (SANSA) and the Technology Innovation Agency (TIA) in Pretoria. The Committee also invited the Auditor-General of South Africa (AGSA) to explain the 2023/24 audit outcomes of the science and innovation portfolio. Additionally, the Committee toured SANSA's Space Operations Division in Hartebeesthoek, and the CSIR's Biomanufacturing Industrial Development Centre (BIDC), Energy Storage Testbed and Information and Cybersecurity Centre. On 15 October 2024, the Committee considered the 2023/24 Annual Report of the National Research Foundation (NRF) in Cape Town.

2. 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 National System of Innovation (NSI) by providing policy leadership and creating an enabling environment for STI. To ensure that the NSI supports efforts to reduce poverty, inequality and unemployment as envisioned by the National Development Plan (NDP) and the 2019 White Paper on STI, the Department 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 research and development (R&D)-led industrial development;
Outcome 5: Knowledge utilisation for inclusive development; and
Outcome 6: Innovation in support of a capable and development state.

2.1. 2023/24 Budget allocation

The Department's 2023/24 budget allocation increased by R1.8 billion from R9.1 billion in the 2022/23 financial year to R10.9 billion. This represented, when adjusted for inflation, a real increase of 13.4%. This marked increase was due to the additional monies allocated for the National Space Infrastructure Hub and the expansion of the MeerKAT / Square Kilometre Array (SKA) Radio Telescope. Because the Department transferred approximately 95% of its budget to implementing agencies, the Transfers and subsidies allocation increased significantly from R8.6 billion to R10.3 billion.

With the tabling of the MTBPS and the Adjusted Estimates of National Expenditure (AENE) in October 2023, the Department's budget allocation was reduced by R311.2 million (exclusively from Transfers and subsidies) to R10.6 billion. These reductions to the Department's budget programmes comprised:

- Programme 2: Technology Innovation – reduced by R72.4 million. The main reductions were R39 million from Space Science and R32.2 million from Innovation Priorities and Instruments.
- Programme 3: International Cooperation and Resources – reduced by R934 000.
- Programme 4: Research, Development and Support – reduced by R197.9 million. The main reductions were R52 million from Human Capital and Science Promotions, and R126.7 million from Basic Science and Infrastructure.
- Programme 5: Socioeconomic Innovation Partnerships reduced by almost R40 million. The main reduction was R38.7 million from Sector Innovation and Green Economy.

The changes to the baseline allocations (Parliamentary grant) of the Department's entities comprised:

- CSIR - reduced by R34.7 million, from R1 billion to R971.4 million.
- NRF - reduced by R50.1 million, from R1 billion to R951.2 million.
- SANSA - reduced by R210 000, from R163.1 million to R162.9 million.
- TIA - reduced by R700 000, from R460.1 million to R459.4 million.

The Department also received R56.5 million (R95.48 million in 2022/23) in donor funds from the European Union (EU) and collected revenue of R6.4 million from the commission on insurance for Persal transactions, project fund surpluses, interest received from a deposit account held with a commercial bank, payment of bursary debt by officials and other recoverable expenditure.

2.2. 2023/24 Expenditure

The Department spent 99.1% of its 2023/24 budget, i.e. R10.47 billion of R10.56 billion, underspending by R90.9 million. The variance in expenditure was mainly due to the R22.2 million not spent under Compensation of employees and the R65.1 million not spent under Transfers and subsidies. The Department received an additional allocation of R19 million for Compensation of employees during the AENE process but could not spend it because there was no carry-through of allocations for the 2024 Medium Term Expenditure Framework (MTEF). Had the R19 million been spent, there would have been a shortfall in the Compensation of employees budget. Programme 2, at R52.4 million, was responsible for the largest share of the total under expenditure, with R43.1 million not spent under Transfers and subsidies.

Under Transfers and subsidies, the R65.1 million total under expenditure was mainly due to the delay in finalising a contract between the Department and the South African National Energy Development Institute (SANEDI), and the contract for the Vaccine Innovation and Manufacturing Strategy (VIMS) being finalised on the last working day of the financial year and hence the payment could not be

processed. Within the Department's budget programmes, the variance under Transfers and subsidies in Programme 1: Administration was mainly due to the R7 million under expenditure of the available R16 million by the Institutional Planning and Support sub-programme. The variance under Transfers and subsidies in Programme 2 was mainly due to the R42.5 million under expenditure by the Innovation Priorities and Instruments sub-programme. The variance under Transfers and subsidies in Programme 4 was mainly due to the R10 million under expenditure by the Human Capital and Science Promotion sub-programme. Table 1 shows the Department's 2023/24 final appropriation and expenditure by budget programme and economic classification.

The Department paid 98.4% (100% in 2022/23) of its invoices and contractual agreements within 30 days in the 2023/24 financial year.

Table 1: 2023/24 Final Appropriation and Expenditure by Programme and Economic Classification

Categories	Final appropriation	Actual expenditure	Variance	2023/24 Expenditure as a % of final appropriation
	R'000			
Department of Science and Innovation				
TOTAL	**10 562 991**	**10 472 056**	**90 935**	**99.1%**
Compensation of employees	389 517	367 294	22 223	94.3%
Goods and services	283 303	281 040	2 263	99.2%
Transfers and subsidies	9 876 079	9 810 991	65 088	99.3%
Payment for capital assets	13 992	12 680	1 312	90.6%
Payment for financial assets	100	51	49	50.9%
Programme 1: Administration				
TOTAL	**418 573**	**399 172**	**19 401**	**95.4%**
Compensation of employees	184 749	175 649	9 100	95.1%
Goods and services	203 591	202 026	1 565	99.2%
Transfers and subsidies	16 141	8 767	7 374	54.3%
Payment for capital assets	13 992	12 680	1 312	90.6%
Payment for financial assets	100	51	49	50.9%
Programme 2: Technology Innovation				
TOTAL	**2 494 133**	**2 441 703**	**52 430**	**97.9%**
Compensation of employees	55 472	46 632	8 840	84.1%
Goods and services	26 717	26 260	457	98.3%
Transfers and subsidies	2 411 944	2 368 811	43 133	98.2%
Programme 3: International Cooperation and Resources				
TOTAL	**146 080**	**144 520**	**1 560**	**98.9%**
Compensation of employees	56 727	55 271	1 456	97.4%

Categories	Final appropriation	Actual expenditure	Variance	2023/24 Expenditure as a % of final appropriation
Goods and services	24 234	27 931	(3 697)	115.3%
Transfers and subsidies	65 119	61 319	3 800	94.2%
Programme 4: Research, Development and Support				
TOTAL	**5 776 655**	**5 763 206**	**13 449**	**99.8%**
Compensation of employees	45 835	45 679	156	99.7%
Goods and services	18 499	15 352	3 147	83%
Transfers and subsidies	5 712 321	5 702 175	10 146	99.8%
Programme 5: Socioeconomic Innovation Partnerships				
TOTAL	**1 727 550**	**1 723 454**	**4 096**	**99.8%**
Compensation of employees	46 734	44 063	2 671	94.3%
Goods and services	10 262	9 471	791	92.3%
Transfers and subsidies	1 670 554	1 669 920	634	99.9%

2.2.1. Unauthorised, Irregular, and Fruitless and Wasteful Expenditure

The Department did not incur any unauthorised, irregular, or fruitless and wasteful expenditure in 2023/24 and 2022/23. As of 31 March 2024, the Department had irregular expenditure of R861 000 and was waiting for condonation by the National Treasury. The Department obtained value for money on all irregular expenditure from previous years, therefore there was no need for recovery. The Department did not incur any material losses through criminal conduct in the current or previous financial years.

2.3. 2023/24 Programme performance

For 2023/24, the Department had originally translated its planned performance into 73 performance indicators and targets. However, in March 2024, due to budget cuts, the Department tabled an amended 2023/24 Annual Performance Plan where two performance targets were removed. These targets were for the manufacturing of three or more Cube Satellites (CubeSats) for the Maritime Domain Awareness (MDA) Satellite Constellation, and the revision of the Palaeosciences Strategy.

For 2023/24, the Department achieved an overall performance of 87%, achieving 62 of its 71 performance targets (Table 2). In 2022/23, the Department achieved 80% of its performance targets.

Table 2: 2023/24 Programme performance

Programme	Achieved	Not achieved	Total	Percentage (%) Achievement
1. Administration	6	1	7	85.7%
The one area of underperformance relates to the filling of approved funded prioritised positions. 77% were filled against a target of 94%. Five positions were put on hold pending finalisation of the organisational structure review. The remaining six posts were only advertised at the end of the third quarter. These would be finalised in the first quarter of the 2024/25 financial year.				
2. Technology Innovation	14	3	17	82.4%

Programme	Achieved	Not achieved	Total	Percentage (%) Achievement
The target of 40 youth supported under the TT100 Learnership/Internship Programme was reduced to 30 due to the budget cuts. However, the target was still missed by eight. The Department plans to review the design, implementation and outcomes of the Da Vinci Institute's Technology Top 100 Programme and will then reconsider its continued support for the programme.				
The target of 235 (achieved 220) new disclosures received from publicly financed R&D institutions by the National Intellectual Property Management Office (NIPMO) has been relegated to Programme 2's Operational Plan as NIPMO does not have control over this outcome.				
The target of 15 (achieved 10) disclosures licensed for the first time received from publicly financed R&D institutions by NIPMO has been relegated to Programme 2's Operational Plan as NIPMO does not have control over this outcome.				
3. International Cooperation and Resources	8	1	9	88.9%
The target of 400 (achieved 224) new South African students participating in international training programmes as part of cooperation initiatives was not achieved. To address the underperformance, a new indicator measuring human capital development was introduced in the 2024/25 Annual Performance Plan. This indicator can then be measured using evidence for which the Department is responsible.				
4. Research, Development and Support	13	3	16	81.3%
The target of 8 500 (achieved 8 284) internationally accredited research articles from researchers awarded research grants was not achieved. The Department will therefore conduct an analysis of publication trends, focusing on different variables such as disciplines, current research capacity and publication processes. The analysis will assist in refining the indicator and targets in subsequent financial years.				
The 4 (zero receivers installed) L-band receivers on the MeerKAT Extension antennas could not be installed until the construction of the antennas was completed. The construction was expected to be completed during the first quarter of 2024/25.				
The remaining 2 (target was 4) MeerKAT Extension antennas were scheduled for installation in the first quarter of 2024/25.				
5. Socioeconomic Innovation Partnerships	21	1	22	95.5%
Of the 150 applications, 39% (58) received pre-approval decisions for the R&D Tax Incentive within 90 days. This was due to challenges related to getting the R&D Tax Incentive Adjudication and Monitoring Committee to quorate, delays in obtaining signatures for the final documentation, and technical and other issues with the online application system. Hence, in mitigation, user support on the reported online system technical issues will be enhanced and the turnaround time for the submission of evaluation reports by technical experts and the processing of committee recommendations immediately after the adoption of minutes will be stringently monitored.				
Overall	**62**	**9**	**71**	**87%**

2.4. Audit conclusion on the financial statements and performance report

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

The AGSA audits and reports on the usefulness and reliability of the reported performance information against predetermined objectives for selected material performance indicators as presented in the annual performance report. Hence, for 2023/24, the AGSA selected material performance indicators from Programme 4 to measure the Department's performance on its primary mandated functions and those that are of significant national, community or public interest. The AGSA did not identify any material findings on the reported performance information for the selected material performance indicators.

3. 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. The Parliamentary grant is the guaranteed, annual allocation from the Department to its entities. The exceptions to this are NACI, which is administered under the Department's Programme 1, and SACNASP, which is funded from the annual membership fees it collects from registered natural scientists. The Department does award SACNASP project funds, and in 2023/24 this amounted to R13.1 million, to help implement its mentoring and professional development programmes.

In terms of public governance, the Public Finance Management Act (PFMA) (No. 1 of 1999) sets the governance standards and requirements for public entities classified within its Schedules. The HSRC, NRF, TIA and SANSA are categorised as National Public Entities or Schedule 3A entities and the CSIR is a National Government Business Enterprise or Schedule 3B entity. Not listed in the Schedules of the PFMA are ASSAf, NACI and SACNASP. However, the latter three entities do adhere to the PFMA in terms of their financial management and governance practices. Table 3 summarises the 2023/24 revenue, programme performance and audit outcomes of the entities.

Table 3: 2023/24 Revenue, programme performance and audit outcomes of the science and innovation entities

Entity	Parliamentary grant R'000	Total revenue R'000	Programme performance	Audit outcome
ASSAf	33 970	44 222	Achieved 16 of 17 targets, 94%	Unqualified with no material findings. Clean audit.
CSIR	971 432	3 179 000*	27 of 31 targets, 87%	Unqualified with no material findings. Clean audit.
HSRC	322 332	598 634	18 of 21 targets, 86%	Unqualified with no material findings. Clean audit.
NACI	n/a	18 411	7 of 8 targets, 88%	n/a
NRF	951 230	5 215 076	11 of 12 targets, 92%	Unqualified with no material findings. Clean audit.
SACNASP	n/a	33 406	8 of 10 targets, 80%	Unqualified with no material findings. Clean audit.
SANSA	162 853	347 694	15 of 17 targets, 88%	Unqualified with no material findings. Clean audit.
TIA	459 431	680 169	15 of 19 targets, 79%	Unqualified with findings. The findings related to material adjustments made during the audit process and not taking appropriate actions to prevent irregular expenditure.

***This is the first time that the CSIR's income exceeds R3 billion.

Within the current constrained economic environment, the main challenge for all the entities is the stagnant and/or declining value, in real terms, of the Parliamentary grant. This grant supports the core legislated mandate of the entities and the development and maintenance of national capability in STI, which includes both skills and infrastructure. In the current, rapidly evolving technologically-enabled world, world class STI capability is of paramount importance if a country wants to transform and grow its economy, safeguard its sovereignty, elevate the lived reality of its citizens, deliver services to its citizens, protect its citizenry and resources, and access new opportunities stemming from the digital era.

Secondly, the declining Parliamentary grant makes the entities more reliant on sourcing contract funds, be it from national, regional and international sources/partners. This may erode the mandate of

the entities, as focus may be diverted to answering questions for which the contract funds were allocated, which may not necessarily be directed to addressing national challenges. In addition, the STI capability built through the Parliamentary grant is used to answer these questions. Hence, if the capability is not maintained and advanced, the entities ability to attract contract income is also adversely affected.

Another factor affecting the ability of the entities to source contract funding is the requirement of the PFMA for the state to source needed services / expertise via open tender processes. This requires that the entities who are funded from the fiscus to develop capability that serves the national interest, compete with the private sector to render services to the state. Attempts to get the National Treasury to exempt entities, in instances that speak to their specific capability/expertise, from the requirement to tender have not been granted. In the case of the CSIR, this has resulted in an annual revenue loss of around R450 million. The entities also use available funds to leverage additional funds from partners. When budgets are cut, the entities ability to leverage additional funds using its already limited funds, is further reduced.

The challenge around the continued development, maintenance and improvement of STI capability in the form of research, development and innovation (RDI) infrastructure is another concern exacerbated by inadequate STI investment. These infrastructures serve many purposes. The infrastructure enable world class R&D, attract needed STI skills, facilitate foreign investment, support the training of the next generation of STI skills, and can be used to engage the public to foster interest in and understanding of science. It can also support the commercialisation of the intellectual property (IP) generated through publicly funded R&D. However, these benefits are only realised if these infrastructures are adequately and sustainably financed, over the long-term, and implemented at the required scale.

All the entities invest in the development of professional and high-level STI skills, and offer development opportunities for youth, new graduates and unemployed graduates to address the systemic challenges around scarce STI skills and to transform the STI workforce. However, because the STI system is relatively small and the funding is inadequate, the researcher cohort cannot be expanded as and when needed, and not all who benefit from the development opportunities can be employed. Furthermore, due to the scarcity of and demand for high-level skills in the country, the science system has to compete with industry for these skills and cannot often match the remuneration and employee benefits offered by industry, both nationally and internationally.

Additional concerns include the escalating cost of doing business, which exacerbates the financial sustainability of the entities and reduces the money available for STI. The lack of permanent corporate premises for both ASSAf and SANSA detracts from the contribution these entities make to improve the lived reality of the citizens of South Africa. It also affects the ability of these entities to establish a broadly recognised and enduring identity, as well as be on par with local and international partners.

In relation to financial and performance management, governance and complying with the necessary legislation, the AGSA, and the private auditors of ASSAf and SANSA, commended the entities for ensuring that legislation and financial controls were complied with. This was evidenced by six of the seven audited entities attaining clean audits. The AGSA however urged that the performance against planned targets be monitored and improved, as well as ensuring that the beneficiaries funded by the portfolio are contributing positively to the economy.

In 2023/24, the CSIR, HSRC and TIA incurred irregular expenditure of R73 000, R53 000 and R3.5 million, respectively. However, value for money was received for the money spent. The HSRC and NRF incurred fruitless and wasteful expenditure of R447 000 and R25 000, respectively. In the case of the HSRC, this was due to traffic fines and missed flights. For the NRF, it was due to cash lost during a hijacking and robbery. All instances of fruitless and wasteful expenditure are being investigated.

4. SECTORAL CONSIDERATIONS

Science, technology and innovation is the foundation on which nations develop and progress, and countries that realise the importance of R&D, invest in it appropriately. Hence, the National Development Plan, 2030 positions STI at the centre of South Africa’s development agenda, especially in the current digital era that is changing the way we live and work. To ensure that STI supports the socioeconomic goals outlined in the NDP, South Africa took a policy decision to ramp up its

investment in R&D so that by 2024, gross expenditure on R&D (GERD) as a percentage of Gross Domestic Product (GDP) reached 1.1% and by 2030, reached 1.5%. Before the NDP, the target was to have 1% of GDP spent on R&D by 2008.

The latest available data shows that GERD as a percentage of GDP reached 0.62% in 2021/22 and totalled R38 billion. The last time GERD reached R38.7 billion was in 2017/18. This equated to 0.76% of GDP. A concerning phenomenon over approximately the last decade is the decline in R&D expenditure by the business sector. This increased marginally in 2021/22 but remains significantly less than expenditure levels recorded before 2018/19. Importantly, GERD has never reached 1% of GDP.

During the Committee's consideration of the 2023/24 Annual Reports, the Minister of Science, Technology and Innovation (the Minister) informed the Committee that the President had issued a proclamation to change the name of the Department to align with that of the Ministry, namely the Department of Science, Technology and Innovation. The Minister reiterated that the overarching objective of the 2019 White Paper on STI and its implementation plan, the 2022-2032 STI Decadal Plan, was to use STI to address national challenges and strengthen regional and international relations to support the development of South Africa. Hence, the Minister was pleased with the performance of the Department, which had improved by 7% from 2022/23, and the entities. Furthermore, measures have been instituted to address areas of weakness in organisational performance.

The Minister highlighted progress on new developments in that the Department had successfully developed and started implementing the Vaccine Innovation and Manufacturing Strategy, which will enhance the country's capacity to develop vaccines, therapeutics and diagnostics targeting various diseases relevant to the global south, with particular emphasis on the African continent. The next phase of work will focus on raising the levels of collaboration in vaccine research, technological innovation, human resources and infrastructure development linked to wider efforts to bolster the resilience of our health economy. By doing so, the Department will be contributing to South Africa's pandemic preparedness.

On the commercialisation and local manufacturing opportunities, the Department concluded a collaboration agreement with the Public Investment Corporation to support the commercialisation and local manufacturing opportunities arising from publicly funded IP. In this regard, R53 million has been provided as an initial investment to support a woman-led SMME in the hydrogen economy.

On energy security, the Department has committed to establishing a national solar energy research facility. The facility will review and derisk new technologies, as well as support technology transfer and localisation as described in the Renewable Energy Masterplan.

The Minister acknowledged the findings of the AGSA that, largely, the science and innovation portfolio took effective action to address previously identified internal control deficiencies, as evidenced by the number of clean audits. The Minister and TIA assured the Committee that the identified internal control deficiencies are being addressed. Furthermore, to ensure stability at executive management level, the advertisement for a new Director-General will be published in November 2024.

Notwithstanding the reported achievements and the progress made in all strategic areas as reported in the 2023/24 Annual Reports, the Department, its entities and the NSI remain significantly underfunded. This 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.

The Committee, cognisant that the NSI is severely underfunded, requested the Department and the entities to outline the impact of the current budget cuts. These impacts included eliminating or scaling back work on strategic areas like hydrogen and energy that are essential for supporting the Just Transition, health innovation, bio-innovation, space science and technology, supporting the protection of intellectual property generated from public funds, technology and innovation support programmes for small, medium and micro enterprises (SMMEs), RDI infrastructure development and human capital

development. The budget cuts have also slowed progress in areas of geographic advantage like climate change, marine and ocean sciences, indigenous knowledge systems, space science and astronomy in that these portfolios cannot keep pace with existing and new demands. Capability built over a significant number of years is being eroded. The need to increase existing and develop new capabilities in emerging areas of STI is also severely hampered.

The Committee hopes that since the STI governance and coordination structures proposed by the 2019 White Paper on STI are in place and operational, STI agenda setting, planning and budgeting will be integrated across government planning so that South Africa fulfils its policy choice of investing 1.5% of GDP in R&D and secures the intended impact from its investment in STI as envisioned by the NDP.

5. COMMITTEE OBSERVATIONS AND RECOMMENDATIONS

The Committee was impressed with and inspired by the volume and quality of work undertaken by the Department and the entities and commended their efforts. The Committee expressed that the work undertaken clearly and substantively sought to address the country's challenges. Furthermore, the Department and the entities ensured that the portfolio of programmes and initiatives were inclusive and representative, especially of marginalised groups. The Committee also stated that the current record of good corporate governance and financial management must be maintained, and where necessary, improved.

Having considered the performance of the Department and the entities and the significant issues that were raised, the Committee's observations and recommendations focus on the key areas that require further attention.

5.1. Observation

The Committee expressed the view that the importance of STI for socioeconomic development was not receiving adequate attention across government and society. Hence, the NSI, the Department and the entities are undervalued and underused, as well as financially incapacitated.

When the Committee toured the SANSA Space Operations facility at Hartebeesthoek and the CSIR's BIDC, Energy Storage Testbed and the National Information and Cybersecurity Centre, it was astounded by the expertise and capability at these facilities. The Committee was also disheartened because firstly, this capability that was developed with public money was not broadly used by government and local industry and secondly, the South African public was largely unaware that these capabilities exist locally. Importantly, the Committee was most concerned with the cost to the country due to the limited adoption and use of this local STI capability by government.

For example, the Information and Cybersecurity Centre possess the expertise and capability that could have prevented the data breach that occurred at the National Health Laboratory Service. SANSA Space Operations, which is the largest space ground station in the southern hemisphere, needs to purchase satellite images of South Africa from foreign countries because South Africa does not have its own earth observation satellites. Other government departments also purchase satellite image data, meaning that South Africa could be paying multiple times for the same data. South Africa also does not have its own communications satellites, which would facilitate digital access for rural communities and support the country's intelligence needs, among other benefits. The cancellation, due to budget cuts, of the CubeSat programme for the Maritime Domain Awareness (MDA) Satellite Constellation is another blow to the country's efforts to safeguard its ocean sovereignty. The first three, of what was supposed to be nine locally produced nanosatellites for the MDA Satellite Constellation, was launched in 2022. The full MDA Satellite Constellation formed part of Operation Phakisa: Oceans Economy and would detect, identify and monitor vessels in near real-time.

5.1. Recommendations

The Committee commends the Department and the South African Agency for Science and Technology Advancement (SAASTA) for the well-considered and intentional work around the Science Engagement Strategy. To further support this work, the Committee recommends that the Minister consider convening a national dialogue on the role and importance of STI to modern living and socioeconomic development.

The Committee recommends that the Department and its entities should continue to explore mechanisms to better track and report on the impact of the investment in STI, so that the relevance of this investment is better understood and appreciated. These mechanisms should also attempt to estimate the “potential loss of impact” due to the current inadequate resourcing of the NSI.
The Committee recommends that the Minister consider directing NACI to undertake a study on the cost to the country of the limited adoption and use, by government, of local STI capability.
The Committee recommends that the Department and entities expand the programme of work that seeks to develop and enhance the capacity of the state.

5.2. Observation
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.

5.2. Recommendation
Given the critical need for additional funding for STI, the Committee recommends that the implementation of the STI Public Budget Coordination Mechanism be prioritised, and that the Department compiles an annual report on the commitments made by government departments to budget for STI, as well as the performance against these commitments.
The Committee resolves to facilitate inter-portfolio engagement on issues of health, agriculture, communications, energy, mining and defence to ensure that budgets meant for R&D are allocated and used for the intended purpose.

5.3. Observation
Given the significant national investment in higher education, there remains a misalignment between the skills being developed and the market demand for science, engineering and technology (SET) skills. There are shortages of skills in engineering, information technology, logistics management, road infrastructure research, data science, cybersecurity, as well as other SET fields. It is 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.

5.3. Recommendation
The Committee recommends that the implementation of the Skills and Innovation Compact be expedited.

5.4. Observation
The NRF reported that with its current budget of around R5 billion, which needs to cover the entire science system, it can only award bursaries to approximately four out of every 10 applicants. The estimated annual funding shortfall for postgraduate students that qualify for bursaries is approximately R1.4 billion. A further R1 billion is needed to support all the researchers that qualify for grants. Additional funding was solicited from the National Skills Fund, but this has not been forthcoming.

5.4. Recommendation
The Committee recommends that the NRF and the Minister continue efforts with both the National Skills Fund and the National Student Financial Aid Scheme to explore whether additional funds could be secured for SET postgraduate bursaries.
In addition, given the market demand for SET skills, the need for R&D that supports the re-industrialisation of the economy and the need to prioritise the development and employment of the country’s youth, the Committee recommends that the National Treasury allocates the additional R2.4 billion needed to offset the existing shortfalls in bursary and grant support.

5.5. Observation
The Committee asked what criteria is used to select applications for bursary awards. In response, the NRF stated that it issues the call for bursary applications to the universities, who then screen the applications, based predominantly on merit, before submitting the eligible applications to the NRF.

Hence, all the applications received by the NRF meet the criteria to be funded. However, the NRF does not have the money to support all eligible students.

5.5. Recommendation
The Committee recommends that the NRF consider mechanisms to screen bursary applications themselves to mitigate student perceptions that certain institutions are being favoured.

5.6. Observation
In relation to SANSA, the Committee was concerned with the apparent inertia around the policy and regulatory framework for space, in that the draft Space Bill is not showing any progress, and a Space Council has not been appointed since the previous Space Council's term ended in 2022. The Committee also expressed the concern that the coordination of South Africa's space programme appeared very fragmented.

5.6. Recommendation
The Committee recommends that the Ministers of STI, Trade, Industry and Competition, Communications and Digital Technologies and Defence prioritise addressing the challenges around the coordination, regulation and resourcing of the national space programme.
The Committee resolves to facilitate similar discussions among the relevant portfolio committees on this matter.

5.7. Observation
The Committee noted with concern that South Africa does not have its own communications and earth observation satellites, as well as its own, fully refurbished satellite launch facilities. This makes South Africa dependent on foreign owned satellites and facilities, which is costly and negatively impacts the need to provide communication and digital access to all its citizens, especially rural communities.

5.7. Recommendation
The Committee recommends that the National Treasury allocate the R570 million that SANSA needs for its satellite build and launch capability. This includes R350 million for EO-Sat1, R120 million for launch capability and R100 million for the development of Synthetic Aperture Radar technology.

5.8. Observation
In relation to IP protection, the Committee was concerned with the relatively low rates of protection, as well as efforts to licence or commercialise existing IP. The Committee wanted to know what the challenges are that hinder IP protection. Budget cuts are also affecting the ability of NIPMO to improve the situation.

5.8. Recommendation
The Committee resolves to facilitate an engagement on the enabling environment for and challenges around IP protection with the relevant portfolio committees, NIPMO, the Department of Trade, Industry and Competition and the Companies and Intellectual Property Commission.
The Committee recommends that the Department and the relevant entities collate a record of all the IP that has been pilfered and formulate a plan for possible retrieval.

5.9. Observation
The Committee acknowledged that the transformation of the sector is receiving considered attention and intentional action by the Department and the entities across all programmes and initiatives. However, as confirmed by the Minister, more needs to be to ensure that the NSI reflect the country's racial, gender, class and spatial demographics. The Committee, therefore, welcomes that the Minister has tasked NACI to convene a summit on the transformation of the NSI before the end of 2024 or early in 2025.

5.8. Recommendation
The Committee will schedule an engagement with the Minister and NACI around the findings and recommendations of the summit.

5.9. Observation
The Committee was concerned by statements around the PFMA negatively affecting the ability of the entities to contract with the state for the provision of services.

5.9. Recommendation
The Committee recommends that the Minister engages the National Treasury on 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.
The Committee recommends that the National Treasury consider granting science councils preference for the delivery of services to the state.

5.10. Observation
The Committee received extensive input on the impacts of the budget cuts on the work of the Department and the entities. Of great concern, is the erosion and/or loss of capability that these cuts have caused. Furthermore, the ongoing implementation of austerity measures does not bode well for efforts to increase STI investment.

5.10. Recommendation
The Committee recommends that Department and entities explore new and expand existing public-private-partnerships to leverage additional resources for energy, health and agriculture innovation, RDI infrastructure development and maintenance, and human capital development. In this regard, co-research on flagship projects and high impact initiatives that prioritises national challenges should receive precedence.

5.11. Observation
The Committee noted with concern the limited funding available to commercialise R&D outputs. The funding to support SMMEs, technology start-ups and entrepreneurs has been cut over the last three years.

5.11. Recommendation
The Committee recommends that the National Treasury allocate the needed R350 million for the Innovation Fund and the R100 million for the Pre-seed Fund to TIA.

Report to be considered.