**Report Of The Portfolio Committee On Higher Education, Science And Innovation On Budget Vote 35: Science And Innovation (2023/24), Dated 19 May 2023.**

The Portfolio Committee on Higher Education, Science and Innovation, having considered Budget Vote 35: Science and Innovation and the 2023/24 Annual Performance Plans of the Department of Science and Innovation and its entities, reports as follows:

1. **INTRODUCTION**

The Constitution of the Republic of South Africa, 1996 and the Rules of Parliament mandates the Portfolio Committee on Higher Education, Science 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. Hence, the Committee annually reviews whether the Department and entities’ Annual Performance Plans (APPs) are aligned to national strategic objectives and the appropriated budget.

The 2023/24 financial year is the last year of the 2019-2024 Medium Term Strategic Framework (MTSF), as well as the 6th Parliament. The Department, Council for Scientific and Industrial Research (CSIR), Human Sciences Research Council (HSRC), National Advisory Council on Innovation (NACI) and National Research Foundation (NRF) briefed the Committee on 19 April 2023. The Academy of Science of South Africa (ASSAf), South African Council for Natural Scientific Professions (SACNASP), South African National Space Agency (SANSA) and Technology Innovation Agency (TIA) briefed the Committee on 21 April 2023. These briefings provided the Committee with an overview of the strategic context within which the Department and entities function, their achievements against strategic objectives, the 2023/24 performance indicators and their concomitant targets and the 2023/24 budget allocations.

1. **POLICY AND STRATEGIC CONTEXT**
	1. **National Development Plan and the 2019-2024 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 science, technology and innovation (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 MTSF, which represents the second five-year phase of implementation for the NDP. At the time of reporting its performance for the second quarter of 2022/23 to the Committee, the Department indicated that 79% of its MTSF targets had been achieved.

The 2019 STI White Paper 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 STI Decadal Plan, approved by Cabinet on 30 November 2022, is the implementation plan of the 2019 STI White Paper 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.
	1. **2020-2025 Strategic Plan of the Department of Science and Innovation**

The Department, seeking to ensure that the NSI expands its positive impact on reducing poverty, inequality and unemployment as envisioned by the 2019 STI White Paper, identified the following six outcome goals for the period 2020-2025. Selected policy initiatives and/or interventions for the remaining term of the current MTSF are also listed.

**Outcome 1: A transformed, inclusive, responsive and coherent NSI**

* Finalise the Transformation Framework that aims to expand, through ten key dimensions, the transformation agenda in all strategic STI focus areas.
* Continue to support grassroots innovators and new entrants to the economy via targeted RDI instruments.
* Modernise the manufacturing, agriculture and mining sectors of the economy so that these sectors are competitive and can contribute to higher GDP growth.
* Implement the 2019 STI White Paper policy thrusts/intents through the STI Decadal Plan’s STI Priorities, Societal Grand Challenges and High-level coordinating structures for STI agenda setting across government.

**Outcome 2: Human capabilities and skills for the economy and for development**

* Continue to implement the Postgraduate Funding Policy that provides full-cost bursaries to students that are exceptional academic achievers, financially needy and/or disabled.
* Support the development of critical high-end skills in technology areas important for building a knowledge society, such as foundational digital capabilities, bioeconomy, space science and technology (S&T), energy, intellectual property (IP) management, nanotechnology, robotics, photonics and areas of technology convergence.
* Support the development of University of Technology (UoT) and Technical and Vocational Education and Training (TVET) college graduates, artisans and technicians by offering experiential learning opportunities through employment in the energy, space and bioeconomy sectors.

**Outcome 3: Increase knowledge generation and innovation output**

* Increase South Africa’s research output/productivity and its world share of publications to 1% of global output.
* Measure and track the number of outputs that are commercialised due to support provided in designated areas.
* Establish the Indigenous Knowledge Bio-innovation Institute.

**Outcome 4: Knowledge utilisation for economic development in (a) revitalising existing industries and (b) stimulating R&D-led industrial development**

* Work with National Treasury to leverage additional monies for the Innovation Fund, which together with the private sector, is a funding instrument that aims to commercialise locally developed technology.
* Continue to participate in the development of sectoral master plans for agriculture, energy, mining and health.

**Outcome 5: Knowledge utilisation for inclusive development**

* Continue to facilitate the commercialisation of grassroots innovations.
* Continue to facilitate access to publicly available IP to enable the deployment of locally developed technology solutions to improve access to basic services, strengthen the capacity of the state and promote the inclusion of women, youth and persons with disabilities (PWD).

**Outcome 6: Innovation in support of a capable and development state**

* Continue to promote the expansion of pilot projects that improve access to basic services, such as water and waste management, housing, sanitation and energy provision.
* Deploy locally developed technology to support basic education, e-Health and infrastructure project scoping.

The Department further supports its six strategic outcome goals through science diplomacy. Managed by Programme 3: International Cooperation and Resources, science diplomacy is the use of scientific collaborations among nations to address common problems and to build constructive international partnerships. A key initiative for 2022/23 included the Department, with the Hungarian Academy of Science and its partners (including the United Nations Educational, Scientific and Cultural Organization, the International Science Council and the World Academy of Sciences), hosting the World Science Forum (WSF) in Cape Town from 6 to 9 December 2022. This was the first WSF to be hosted in Africa since its inception in 2003. The WSF is one of the leading global platforms that encourage dialogue on the role science should play in society. The central theme for WSF 2022 was “Science for Social Justice”.

The WSF 2022 adopted the Cape Town Declaration, where participants committed to, inter alia:

*“We therefore commit for our actions to be guided by the values of Ubuntu that is respecting the universal bond of sharing that connects all humanity, as well as by human rights principles and standards, and to working together to harness the power of science to achieve the ambitions of the Sustainable Development Goals (SDGs), which underpin social justice.*

*We also undertake in our respective spheres of influence and responsibility, for our policy- and decision-making with regard to the advancement of social justice, to be guided and informed by robust scientific data, evidence and advice.*

*We will prioritize efforts to support the translation of research results, through both technological and social innovation, to be applied for the benefit of all of society in support of social justice.*

*We will safeguard, nourish and promote the unique ability of science to inspire progress, to foster tolerance, to unite, and to care for the vulnerable, through concerted public engagement and communication actions, building awareness and understanding of the role of science in support of social justice.”*

1. **VOTE 35: SCIENCE AND INNOVATION (2023/24)**

The 2023 State of the Nation was framed around the issues of most concern to South Africans, i.e., loadshedding, unemployment, poverty and the rising cost of living, and crime and corruption. Due to the wide-ranging, detrimental effects of loadshedding, the President indicated that the immediate priority would be to restore the country’s energy security. The STI Decadal Plan identifies energy innovation as one of its priorities and the Department’s programme of support focuses on developing and demonstrating advanced alternative technologies that diversify energy resources away from fossil fuels; reduces the energy intensity of the economy; and leverages the country’s natural resources to contribute to the energy mix. Key initiatives include the Hydrogen and Fuel Cell Technologies RDI Strategy (branded HySA) and the projects under the Hydrogen Society Roadmap that emanate from the work done through HySA. These initiatives also form part of efforts to transition to a low-carbon economy; adapt to and mitigate the effects of climate change; and access opportunities in emerging industrial sectors focused on green hydrogen, fuel cells and electric vehicles. Furthermore, a number of the successes enumerated by the President in relation to industrial development or revitalisation; streamlining regulatory processes; and improving services for citizens and industry, among others, hinge on technology adoption and deployment, which is a key focus of the Department’s Strategic Outcome Goals. Furthermore, in keeping with its goals of using knowledge for economic and inclusive development, as well as supporting the capability of the state, 2023/24 will see, among others:

* The Department continuing to partner with the Department of Mineral Resources and Energy to deploy fuel cells in government buildings and critical infrastructure to address energy security challenges;
* The candidate COVID-19 mRNA vaccine, locally produced by Afrigen Biologics with South African Universities, entering clinical trials in 2023.
* Seven projects from the Department’s RDI initiatives in indigenous African medicines receiving R36 million for high-end product development, agri-business and the manufacturing of natural products.

The 2023/24 Budget announced that the tax policy instrument that supports early-phase R&D, the R&D Tax Incentive, will be extended for 10 years from 1 January 2024. Furthermore, the definition of R&D will be refined to make the R&D Tax Incentive simpler to understand and manage. With R5.7 billion in tax revenue foregone from 2005/06 to 2018/19, the R&D Tax Incentive has supported private sector R&D worth more than R40 billion.

1. **2023/24 BUDGET AND ANNUAL PERFORMANCE PLANS OF THE DEPARTMENT OF SCIENCE AND INNOVATION**

Over the medium-term, the Department will focus on strengthening research infrastructure and innovation capabilities by continuing to fund the South African Research Infrastructure Roadmap (SARIR), which is allocated R3.9 billion for this purpose. The key areas of focus in relation to strengthening research capability is the development of the National Space Infrastructure Hub and the expansion of the Square Kilometre Array (SKA) radio telescope, which are allocated R1.2 billion and R1.3 billion respectively over the medium term. The Department continues to support human capital development to ensure that the NSI remains globally competitive and supports South Africa’s skills needs, which is allocated R8.7 billion over the medium term. Furthermore, the Department plans to advance innovation and address key competitiveness challenges, including market sustainability and facilitating access to new export markets. Hence, the Department will support 15 commercial outputs in designated areas such as health care and 85 technology demonstrations, prototypes, products and services to the amount of R6.8 billion over the medium term.

The Department’s 2023/24 budget allocation increases by R1.8 billion from R9.1 billion in the 2022/23 financial year to ***R10.9* billion** (Table 1). This represents, when adjusted for inflation, a real ***increase of 13.4%***. However, in the two outer years of the MTEF, the Department’s allocation is expected to decline to R10.5 billion and R10.1 billion respectively. This marked increase in the Department’s allocation is due to the additional monies allocated for the National Space Infrastructure Hub and SKA. Hence, the subsequent decline in the Department’s budget allocation in the two outer years of the MTEF is also due to the decline in funds allocated to these two infrastructure projects. In terms of economic classification, the percentage apportionment of the Department’s 2023/24 budget allocation of R10.9 billion remains the same as in previous years. Hence, the budget allocation comprises Current payments of R578 million (5.3% of total allocation), Transfers and subsidies of R10.3 billion (94.6% of total allocation and a significant R1.7 billion increase from 2022/23) and Payments for capital assets of R10.4 million (0.09% of total allocation).

**Notable changes in the 2023/24 budget allocation to Transfers and subsidies include:**

**Transfers and subsidies to Departmental agencies and accounts (current payments):**

* The allocation for Innovation projects research increases from R468.3 million to R521.4 million.
* The allocation for Space science research from the Economic Competitiveness and Support Package (ECSP) decreases from R111.1 million to R33.4 million, presumably, now that the SANSA Regional Space Weather Centre has been completed.
* Space science research: Space Infrastructure Hub is allocated R775 million ***for the first time***.
* The allocation to the NRF: R&D in Indigenous Knowledge Systems (IKS) decreases from R13.8 million to R6.8 million.
* The allocation to various institutions for Strategic science platforms for R&D increases from R97.3 million to R242.3 million.
* The allocation to various institutions for Science awareness, research and initiatives to encourage youth participation in science increases from R80.8 million to R94.4 million. The process of capacitating the NRF’s South African Agency for Science and Technology Advancement (SAASTA) to coordinate science engagement nationally will officially start in 2023/24 and will address existing skills gaps in the organisation and establish stakeholder coordination mechanisms.

**Transfers and subsidies to Departmental agencies and accounts (capital payments):**

* The allocation to various institutions for Infrastructure projects for R&D increases from R699.7 million to R899.6 million for the SARIR.
* The allocation to the NRF: SKA capital contribution to research increases from R1.1 billion to R1.7 billion for the 13 additional MeerKAT antennas and the installation of receivers (ultra-high frequency and L-band) on these antennas.

**Transfers and subsidies to Non-profit institutions (current payments):**

* The allocation to various institutions for Health innovation research decreases from R95 million to R55.2 million.
* The allocation to various institutions for Hydrogen strategy research decreases from R93.6 million to R43.8 million.

Overall, transfers for capital expenditure on infrastructure amount to R1.3 billion in 2023/24.

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 remains 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, receive 95.5% of the Department’s total budget allocation. Furthermore, only Programmes 2 and 4 are allocated, when adjusted for inflation, real increases of 28.4% (Space Infrastructure Hub) and 15.8% (SKA) respectively. The allocations to Programmes 1, 3 and 5 all decrease in real terms, despite Programme 5 now having an additional 12 performance targets.

For 2023/24, the Department has translated its planned performance into 73 (56 in 2022/23) performance indicators and targets, with Programmes 1, 4 and 5 accounting for the additional 17 performance targets.

**Table 1: 2023/24 Budget summary of the Department of Science and Innovation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Programme** | **2022/23 Adjusted appropriation****(R’million)** | **2023/24 Budget allocation****(R’million)** | **2023/24****Nominal increase/decrease****(R’million)** | **Nominal percentage change in 2023/24** | **Real percentage change in 2023/24 (inflation-adjusted)[[1]](#footnote-1)** | **Number of performance targets for 2023/24** |
| 1. Administration | 352.1 | **344.1** | -8.0 | -2.3 | **-6.8** | 7 |
| 2. Technology Innovation | 1 907.0 | **2 568.4** | 661.4 | 34.7 | **28.4** | 18 |
| 3. International Cooperation and Resources | 149.4 | **149.9** | 0.5 | 0.3 | **-4.4** | 9 |
| 4. Research, Development and Support | 4 979.2 | **6 046.0** | 1 066.9 | 21.4 | **15.8** | 17 |
| 5. Socio-economic Innovation Partnerships | 1 757.6 | **1 765.9** | 8.3 | 0.5 | **-4.2** | 22 |
| **Total** | 9 145.3 | **10 874.2** | 100 | 18.9 | **13.4** | **73** |

* 1. **Programme 1: Administration**

Programme 1 provides strategic leadership, management and support services to the Department and is responsible for seven (five in 2022/23) of the Department’s 2023/24 performance targets. It has four sub-programmes; namely, Ministry, Institutional Planning and Support (IPS), Corporate Services (CS) and Office Accommodation.

The two new performance indicators are:

* Hosting an annual Inter-Ministerial Committee (IMC) on STI; and
* Hosting an annual Presidential STI Plenary.

Programme 1’s allocation decreases from R352.1 million to R344.1 million. The allocation will mainly be spent on salaries (R175.9 million) and on Goods and services (R142 million). The sub-programmes, IPS and CS, being responsible for strategic and operational planning, management, monitoring and evaluation, receive the bulk of Programme’s 1 allocation; namely, R332.6 million. Programme 1 administers and funds the operations of NACI and transfers R15.7 million to Non-profit institutions for *Institutional and programme support research*.

The Department has a total staff establishment of 420 and aims to have 94% of all approved, funded posts filled by 31 March 2024. The Department indicated that its current vacancy rate is 8.2%. Approximately 53% of the Department’s staff is employed in Programme 1.

Because of the policy shift proposed by the STI White Paper and Decadal Plan, the Department is advancing the review of its current 2014 approved organisational structure.

* 1. **Programme 2: Technology Innovation**

Programme 2 enables R&D in space S&T, energy security, the bioeconomy, and in the areas of nanotechnology, robotics, photonics and IKS, and promotes the realisation of commercial products, processes and services from these R&D initiatives. In addition, through the implementation of enabling policies and interventions along the entire innovation value chain, promotes the protection and utilisation of intellectual property (IP), technology transfer and technology commercialisation. It is responsible for 18 (unchanged) of the Department’s 2023/24 performance targets. Programme 2 has five sub-programmes and one specialised service delivery unit (SSDU). These are Space Science, Hydrogen and Energy, Bio-innovation, Innovation Priorities and Instruments (IPI), the Office of the Deputy Director-General (DDG) and the SSDU, the National Intellectual Property Management Office (NIPMO).

Programme 2 is allocated R2.6 billion (R1.9 billion in 2022/23) of the Department’s total allocation. At R1.1 billion (increasing from R1 billion), the IPI sub-programme that supports and strengthens the policy initiatives that aim to create and sustain an enabling environment for innovation, technology development and the commercialisation of products from publicly funded R&D, continues to receive the largest share of Programme 2’s budget. The allocation to the Space Science sub-programme increases from R286 million to R986.5 million due to the R775 million allocated to the Space Infrastructure Hub. The allocation to the Hydrogen and Energy sub-programme decreases from R253.4 million to R198 million. The allocation to the Bio-innovation sub-programme decreases from R248.9 million to R210.3 million. The R56 million allocation to NIPMO remains the same as in 2022/23.

Approximately 96% (R2.5 billion) of Programme 2’s budget is allocated to Transfers and subsidies. These include R460.1 million (458.4 million in 2022/23) for TIA, R163.1 million (R162.4 million in 2022/23) for SANSA, R775 million for the Space Infrastructure Hub, R120 million for Emerging research areas and R521.4 million for Innovation projects research.

Strategic policy initiatives that will receive attention over the medium term include:

* Continuing to implement the Innovation Fund, which supports the commercialisation of locally developed IP;
* Amending the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR Act); and
* Developing the STI Plans for health, energy and agriculture research and innovation.
	1. **Programme 3: International Cooperation and Resources**

Programme 3 supports South Africa’s foreign policy through science diplomacy. Hence, it develops, promotes and manages international relationships, opportunities and S&T agreements that both strengthen the NSI and enable an exchange of knowledge, capacity and resources between South Africa and its international partners. It is responsible for nine (unchanged) of the Department’s 2023/24 performance targets. Programme 3 has four sub-programmes; namely, Multilateral Cooperation and Africa, International Resources, Overseas Bilateral Cooperation and the Office of the DDG.

Programme 3’s allocation increases marginally from R149.4 million to R149.9 million, with the percentage distribution of the allocation between sub-programmes remaining the same as in previous financial years. The allocations to all sub-programmes decrease, except for the Office of the DDG. Transfers and subsidies amount to R76.7 million (R76.4 million in 202/232), comprising R17.1 million for the NRF, who manages Bilateral cooperation for global science development agreements on behalf of the Department; R48.8 million for Non-profit institutions for Global science: International multilateral agreements and R10.8 million for Global science: African multilateral agreements. The latter two transfers to Non-profit institutions have increased significantly from 2020/21 levels, when International multilaterals was allocated approximately R5.1 million and African multilaterals was allocated R200 000. Current payments amount to R73.2 million with R55.1 million allocated to salaries.

Strategic policy initiatives that will receive attention over the medium term include:

* Supporting the Southern African Development Community Regional Indicative Strategic Development Plan initiatives and African Union Agenda 2063 initiatives;
* Continuing the various European Union and Brazil, Russia, India, China and South Africa grouping (BRICS) engagements; and
* Strengthening international research cooperation.
	1. **Programme 4: Research, Development and Support**

Programme 4 seeks to provide an enabling environment for research and knowledge production that promotes the strategic development of basic sciences and priority science areas through science promotion, human capital development and the provision of research infrastructure and relevant research support, in pursuit of South Africa’s transition to a knowledge economy. It is responsible for 17 (14 in 2022/23) of the Department’s 2023/24 performance targets. Programme 4 has five sub-programmes; namely, Human Capital and Science Promotions, Science Missions, Basic Science and Infrastructure, Astronomy and the Office of the DDG.

The three new performance indicators are:

* Revising the Palaeosciences Strategy to align with the STI Decadal Plan;
* Producing the South African High-level All-Atlantic Ocean Research Forum report; and
* Establishing 10 IKS-based smart villages in Nyandeni in the Eastern Cape.

Programme 4 is allocated R6 billion (R4.9 billion in 2022/23) of the Department’s total allocation. The significant increase is largely driven by the R282.7 million increase in the allocation to the Basic Science and Infrastructure sub-programme, bringing the total allocation to R1.2 billion, and the R615.6 million increase in the allocation to the Astronomy sub-programme, bringing the total allocation to R1.7 billion. The Human Capital and Science Promotions sub-programme increases marginally from R2.76 billion to R2.8 billion. The allocation to the Science Missions (research in areas of geographic advantage, excluding astronomy) sub-programme increases from R112.6 million to R257 million.

In terms of economic classification, Transfers and subsidies constitute 99% (R5.99 billion) of Programme 4’s total budget. The Academy of Science of South Africa is allocated R34 million (R33.8 million in 2022/23) for its parliamentary grant. The NRF is allocated R4.3 billion (R3.5 billion in 2022/23) with R1 billion of these monies constituting its parliamentary grant. The CSIR is allocated R294.2 million (R281.8 million in 2022/23) for Cyberinfrastructure R&D. Strategic science platforms and Infrastructure projects are allocated R242.3 million and R899.6 million, increasing significantly by R145 million and R200 million respectively.

Strategic policy initiatives that will receive attention over the medium term include:

* Finalising the Skills Framework to support the STI Decadal Plan and Economic Reconstruction and Recovery Plan (ERRP);
* Continuing the development of the Transformation Framework;
* Developing regulations for declaring research institutions and determining national research facilities;
* Developing the Framework on the Refinement and Alignment of the South African Research Chairs Initiative, Centres of Excellence (CoEs) and the Proposed National Institutes for Research, Development and Innovation;
* Developing the National Astro Tourism Strategy; and
* Reviewing the national astronomy institutional landscape with a view to establishing an Astronomy Institute.
	1. **Programme 5: Socio-Economic Innovation Partnerships**

Programme 5 seeks to enhance the growth and development priorities of government through targeted STI interventions and the development of strategic partnerships with all levels of government, industry, research institutions and communities. It is responsible for 22 (10 in 2022/23) of the Department’s 2023/24 performance targets. Programme 5 has five sub-programmes; namely, Sector Innovation and Green Economy, Innovation for Inclusive Development, Science and Technology Investment, Technology Localisation, Beneficiation and Advanced Manufacturing, and the Office of the DDG.

The new performance indicators are:

* Fund or co-fund 12 innovation support interventions to enable development of sub-national systems of innovation that facilitate inclusive access *(as stated in the Department’s 2022/23 APP, the original target for 2023/24 was 27 innovation support interventions)*;
* Create and support 32 job opportunities through DSI demonstrators/models that experiment with new ways for creating jobs;
* Create and support 100 income opportunities through demonstrators/models that experiment with new ways for creating income;
* Transfer and diffuse four technology demonstration solutions to support small, medium and micro enterprises (SMMEs) and township and rural enterprise development;
* Support 20 youth capability development programme participants in collaboration with the Water Research Commission and municipalities;
* Support two innovation intermediaries to achieve innovation for inclusivity;
* Support 100 grassroots innovators to commercialise their technology products;
* Support 15 localised facilitates (for example, living labs) to increase the innovation footprint in rural and township communities;
* Support through innovation, five basic services in support of the District Development Model (DDM) or sector departments;
* Support through innovation, three district municipalities in one of the four DSI DDM impact areas;
* Support with systemic solutions, three district municipalities to advance innovation-driven local economic development;
* Produce a report on the STI Budget Coordination Roadmap;
* Implement the Water and Waste RDI Roadmaps by supporting four new research grants, four technology demonstrators and five technical assessments; and
* Implement six Sector Innovation Fund interventions.
* The performance indicator to host annually three learning interventions was completely removed from Programme 5.

Programme 5 is allocated R1.77 billion (R1.76 billion in 2022/23) of the Department’s total budget allocation. The allocation to all the sub-programmes increases marginally, with the Sector Innovation and Green Economy sub-programme still allocated the largest share at R1.1 billion. Approximately 97% (R1.7 billion) of Programme 5’s budget is allocated to Transfers and subsidies, with the HSRC allocated R322.3 million (R321.1 million in 2022/23) and the CSIR allocated R1 billion for their parliamentary grants. The HSRC is also allocated R15.6 million to develop S&T indicators. The CSIR is also allocated R65.3 million for Mining R&D.

Strategic policy initiatives that will receive attention over the medium term include:

* Improving inclusion and building more linkages across the NSI;
* Enhancing policy coherence and programme coordination in the NSI;
* Expanding the scientific knowledge base of the NSI;
* Upgrading monitoring and evaluation and policy capacity;
* Adopting a broader conceptualisation of innovation beyond R&D;
* Using public procurement as a vehicle to further innovation;
* Increasing support for and collaboration with the business sector;
* Increasing the spatial footprint of innovation;
* Increasing support for social and grassroots innovation;
* Exploiting new sources of growth;
* Using innovation to revitalise existing sectors;
* Strengthening government’s role as an enabler of innovation;
* Strengthening skills in the economy; and
* Increasing levels of funding for STI.
1. **2023/24 BUDGETS, ANNUAL PERFORMANCE PLANS / SHAREHOLDERS COMPACT OF THE ENTITIES THAT REPORT TO THE DEPARTMENT OF SCIENCE AND INNOVATION**

The entities are funded through a Parliamentary grant, specific project and/or contract funds, or from income generated from research and commissioned projects, or from income generated from royalty, publishing, membership, registration and/or facility fees. The Parliamentary grant (also called the baseline allocation) is the guaranteed, annual allocation from the Department to its entities (Table 2). The South African Council for Natural Scientific Professions is funded through registration fees and; hence, does not receive a parliamentary grant. However, it does receive project funds from the Department. As stated previously, Programme 1: Administration administers and funds the operations of NACI.

**Table 2: 2023/24 Parliamentary grant and total revenue of Entities**

|  |  |  |  |
| --- | --- | --- | --- |
| **Entity** | **Parliamentary grant** | **Total projected revenue** | **Parliamentary grant as a % of total revenue** |
| Academy of Science of South Africa | R33 970 000 | R37 574 000 | 90% |
| Council for Scientific and Industrial Research | R1 006 119 000 | R3 104 300 000 | 32% |
| Human Sciences Research Council | R322 332 000 | R570 890 000 | 57% |
| National Research Foundation | R1 001 295 000 | R5 925 465 000 | 17% |
| South African National Space Agency | R163 063 000 | R1 114 000 000 | 15% |
| Technology Innovation Agency | R460 131 000 | R616 215 000 | 75% |
| **Total** | **R2 986 910 000** |  |

* 1. **Academy of Science of South Africa (ASSAf)**

The Academy of Science of South Africa, the country’s official national academy of science, was established through the ASSAf Act (No. 67 of 2001). The Academy represents the country in the international community of science academies. The Academy has a dual mandate; namely, to promote outstanding achievement in all fields of scientific enquiry and to honour distinguished scholars through election to Membership of the Academy; and to undertake studies on matters of public interest to provide evidence-based scientific advice to government and other stakeholders.

The Academy’s performance is driven through the following strategic outcome-oriented goals:

**Outcome 1:** Independent, authoritative, and influential scientific advice – Performance targets: two consensus studies and eight proceedings reports, policy-makers booklets and statements.

**Outcome 2:** Science engagement – Five public lectures, 12 webinars/workshops/conferences, four newsletters and 20 media releases.

**Outcome 3:** Knowledge mobilisation – Six South African Journal of Science (SAJS) publications, four Quest publications, eight knowledge resources added to the institutional repository and website, and two new journal titles added on the Scientific Electronic Library Online (SciELO) – South Africa platform.

**Outcome 4:** Facilitating partnerships – Four strategic partnerships across national, regional and international spheres.

**Outcome 5:** Scholarship support – Support four activities with African Academies, support four young scientist activities and award one ASSAf Gold Medal.

**Outcome 6:** Supporting transformation within the Science Advisory Programme, Strategic Partnerships Programme and Scholarly Publishing Programme – Increase proportion of black and women members by 2% each.

The performance targets (by category/action) across the six strategic outcomes total 17 for the 2023/24 financial year. In 2023/24, two new consensus studies will be undertaken; namely, One Health and Global Change. The Academy will initiate the process to establish a new Standing Committee on Science, Technology, Engineering, Mathematics and Innovation (STEMI) and will initiate a Women and Equity Sub-Programme. The latter will serve as ASSAf’s primary vehicle on matters concerning women in science, and will advance gender transformation in STI. The Women and Equity Sub-Programme will not only target professionals but will also extend to high school level (Grades 9-12) to encourage girls to choose the sciences and provide mentorship support. An advisory committee on Gender Equality and Equity will be established to support this Sub-Programme.

The Academy’s projected total revenue for 2023/24 is R37.6 million (R36.2 million in 2022/23), comprising the parliamentary grant of R34 million, R2 million from the Department for regional and international cooperation and R1.6 million from exchange transactions. In relation to programme expenditure, Governance and administration is allocated R12.9 million, Science advisory R4.8 million, Strategic partnerships R8.4 million and Scholarly publishing R11.4 million.

The Academy identified that the key risks to its functioning pertain to retaining and attracting the necessary human capital; receiving and generating adequate funds, as well as the cost to comply with its financial compliance framework; and ensuring adequate and regular upgrades to its information and technology (IT) management systems.

* 1. **Council for Scientific and Industrial Research (CSIR)**

The Council for Scientific and Industrial Research was established through the Scientific Research Council Act (No. 33 of 1945) and constituted as a science council by the Scientific Research Council Act (No. 46 of 1988, as amended by Act 71 of 1990). 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 socioeconomic prosperity in South Africa.

The CSIR’s current strategy, named Project Synapse, responds to global and local socio-economic and technological megatrends and South Africa’s challenges and opportunities. Project Synapse defines technology sector clusters that seek to balance scientific and industrial development by intensifying industrial development in priority, high-impact economic sectors through RDI. Project Synapse defines priority industries as those industries that:

* Present the greatest potential for socio-economic impact according to a robust set of economic and social criteria that are both forward looking and reflective of the current status; and
* Dependent on R&D, are amenable to stimulation through innovation, and thus offer opportunities for the CSIR to pursue.

The CSIR’s 31 key performance indicators, which show no significant changes from previous years, are structured around five strategic objectives (SO); namely:

**SO1: Conduct RDI 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.

**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, technology localisation and industrialisation in a collaborative manner, thereby contributing to the re-industrialisation of the country.

**SO3: Drive socioeconomic 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 government to drive the socio-economic transformation of South Africa through RDI.

**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.

**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 efficient and sound governance.

Strategic initiatives that will be undertaken in 2023/24 include the:

* Building of product prototypes, infrastructure and skills to support the local manufacture of vaccines and therapeutics via a virus-like particle vaccine platform, the Future Pharma pharmaceutical production facility and the African Biomanufacturing Workforce Training Programme.
* Development of processes and products from hemp and cannabis for the emerging cannabis industry, where a key focus will be ensuring the economic inclusion of women and youth.
* Continued collaboration with industry and entities to develop competency in human-centred automation and to enhance the uptake of fourth industrial revolution (4IR) technologies by establishing 18 learning factories (LFs) at TVET colleges.
* Development of an early warning system for tailings dam wall failures based on electrical resistance tomography.

The CSIR aims to increase its income from the private sector to 15% and international sector income to 12% by 2025/26. The long-term sustainable target is 30% for both private sector and international income combined. Total revenue in 2023/24 is projected to be R3.1 billion, with R&D contract income projected to be R2.4 billion, the parliamentary grant projected to be R744.5 million and royalty income projected to be R1.7 million. The CSIR is also budgeting for a net profit of R11.5 million. The budgeted investment in property, plant and equipment for the 2023/24 financial year is R148 million.

The CSIR aims to accelerate the pace and expand the scale at which its IP assets are commercialised. Hence, the CSIR Technology Commercialisation Enterprise will be established in 2023/24. To date, the CSIR has raised R100 million as an initial investment to de-risk its technologies to improve their market readiness. In addition, the CSIR Commercialisation Fund that was launched in 2021 will be directed to the commercialisation of its prioritised assets. The CSIR adopted a Capability Development Framework for the systemic development of existing and new capabilities relevant to its Strategy. New areas of growth that are being invested in include developing capabilities and technologies for precision agriculture, the local manufacture of pharmaceuticals, biological and chemical conversions, and end-to-end logistics.

The CSIR identified the following key risks to its sustainability and capability:

* The decline, in real terms, of the Parliamentary grant.
* Increasing labour and utility costs, high inflation, as well as needing an additional R61 million in the short- to medium-term to fully mitigate the impact of loadshedding.
* Pressure to increase contract R&D income, yet in instances where direct contracting with the CSIR by the state would best serve the national interest, requests to National Treasury to do so, have been denied. Furthermore, attempts to be designated as the preferred supplier for its core mandate services in support of national efforts have been unsuccessful, significantly constraining the CSIR’s ability to execute its core mandate.
* Competition for experienced scientists and engineers (already in short supply) and the associated effect on building competitive capability.
* Ageing infrastructure and the lack of adequate capital investment.
* Lack of resources to implement digital transformation of systems and processes.
* Due to the dearth of adequate skills and lack of funding, specific capabilities at risk are health innovation; defence and security; transport and logistics; and ICT, engineering, systems engineering and 4IR skills.
	1. **Human Sciences Research Council (HSRC)**

The Human Sciences Research Council is a statutory research council, mandated in terms of the HSRC Act, 2008 (No. 17 of 2008) to:

1. Initiate, undertake and foster strategic basic and applied research in human sciences, and to address developmental challenges in the republic, elsewhere in Africa and in the rest of the world by gathering, analysing and publishing data relevant to such challenges, especially by means of projects linked to public sector oriented collaborative programmes;
2. Inform the effective formulation and monitoring of policy, as well as evaluate the implementation thereof;
3. Stimulate public debate through the effective dissemination of fact-based research results;
4. Help build research capacity and infrastructure for the human sciences;
5. Foster research collaboration, networks and institutional linkages;
6. Respond to the needs of vulnerable and marginalised groups in society through research and analysis of developmental issues, thus contributing to the improvement of the quality of their lives;
7. Develop and make available data sets underpinning research, policy development and public discussion of developmental issues; and
8. Develop new and improved methodologies for use in the development of such data sets.

The HSRC’s 21 key performance indicators, which show no significant changes from previous years, are structured around five strategic outcomes; namely:

**Outcome 1:** National, regional and global leadership in the production and use of targeted knowledge to support the eradication of poverty, the reduction of inequalities and the promotion of employment.

**Outcome 2:** A consolidated relationship of trust and influence with government to help guide and inform policy.

**Outcome 3**: Recognition as a trusted and engaged research partner within scientific communities and civil society.

**Outcome 4:** Transformed research capabilities.

**Outcome 5:** Sustainable income streams.

Strategic initiatives that will be undertaken in 2023/24 include:

* An impact assessment of the DDM on the Just Transition implementation in the Waterberg District through the hydrogen economy study.
* Conceptualisation of a monitoring and evaluation mechanism across 52 municipalities to assess whether and how the DDM has made a difference to service delivery.
* Hosting the 2023 Conference on Green Hydrogen and Just Energy Transition.

The HSRC projects that its total revenue for 2023/24 will be R570.9 million, with Programme 1: Administration allocated R271 million (48%) and Programme 2: Research, Development and Innovation allocated R300 million (52%). Due to the nature of the HSRC’s work, salaries remain a key cost driver and accounts for 52% of the HSRC’s expenditure in 2023/24. There is also continued pressure on the HSRC to increase external income to ensure that all necessary budget commitments in terms of staff, administration, infrastructure and research can be met, as well as decrease its reliance on the Parliamentary grant. For 2023/24, the Parliamentary grant constitutes 56.5% of the HSRC’s total revenue, whereas the aim is to reduce this to around 53%.

* 1. **National Advisory Council on Innovation (NACI)**

The National Council on Innovation Act (No. 55 of 1997) mandates NACI to advise the Minister of Higher Education, Science and Innovation and, through the Minister, the Cabinet, on the role and contribution of science, mathematics, innovation, and technology, including indigenous technologies, in promoting and achieving national objectives. The ultimate aim of NACI’s work is to improve and sustain the quality of life of all South Africans, develop human resources for S&T, build the economy, and strengthen the country’s competitiveness in the international arena.

The 2020-2025 Strategic Plan of NACI identifies the following strategic outcomes against which NACI’s performance is measured:

**To learn from previous experience to improve efficacy and ensure evidence-based, informed, *confidential*, and timely policy advice to the Minister of Higher Education, Science and Innovation and, through the Minister, the Cabinet.**

The Council will produce and engage on three STI draft advice.

**To contribute to the building of NSI monitoring, evaluation, and learning capability, to assess the health of the NSI and its contribution to sustainable and inclusive development.**

The Council will finalise two NSI monitoring and evaluation reports; ensure the ongoing maintenance and implementation of the National STI Information Portal (NSTIIP) and produce the STI Indicators Report.

**To contribute to the building of a well-coordinated, responsive, and effective NSI by exploring and proposing solutions to the long-standing STI policy questions of coordination, prioritisation, financing, size and shape, human resources, and knowledge production and diffusion.**

The Council will undertake environmental scanning for the NSI.

**To transform NACI into a smart, efficient, and learning organisation.**

The Council will update and implement a communication plan, implement its corporate governance system, and pilot Knowledge Management System Tools.

Over the medium term, strategic initiatives that will be undertaken include:

* Implementing the 2019 STI White Paper proposals regarding the renewal and repositioning of NACI.
* Amending the NACI Act.
* Establishing NACI as an independent entity.
* Strengthening NACI’s monitoring, evaluation, advisory, planning and analytical capabilities.
* Ensuring adequate resources and skills for the NACI Secretariat.
* Strengthening communication, branding and public engagement.

The DSI’s Programme 1: Administration funds and administers the operations of NACI and the projected expenditure for 2023/24 amounts to R17 million, consisting of R11.3 million for staff salaries and R5.7 million for goods and services.

* 1. **National Research Foundation (NRF)**

The National Research Foundation was established through the NRF Act (No. 23 of 1998), which was amended in 2018 by the National Research Foundation Amendment Act (No. 19 of 2018). As per Act 19 of 2018, the object of the Foundation is to contribute to national development by:

1. Supporting, promoting and advancing research and human capacity development, through funding and the provision of the necessary research infrastructure, in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including humanities, social sciences and indigenous knowledge;
2. Developing, supporting and maintaining national research facilities;
3. Supporting and promoting public awareness of, and engagement with, science; and
4. Promoting the development and maintenance of the national science system and support of Government priorities.

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

**Outcome 4:** A transformed organisation that lives its culture and values.

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 2 supports the national imperative of developing a scientifically literate society through a deliberate strategic focus on engaged research; enabling public access to research and science engagement infrastructure; support for the development of science, technology, engineering and mathematics (STEM) education; building science engagement capacity and capability; and facilitating collaborations through private sector partnerships in science engagement.

* A new output indicator seeks to have four interventions to build science engagement capacity across the system.

**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 3 is responsible for Reviews and Evaluations; Grants Management and Systems Administration; Knowledge Advancement and Support; Research Chairs and Centres of Excellence; and Human and Infrastructure Capacity Development.

* A new output indicator seeks to have 4 452 rated researchers in 2023/24. However, data from the NRF’s website shows that as from 18 April 2023, there are 4 517 rated researchers.
* Due to the full-cost Postgraduate Funding Policy, the numbers of postgraduate students the NRF can support declines even further, from approximately 6 218 in 2022/23 to 5 943 in 2023/24.
* Due to the biennial allocation of the National Equipment Fund, the number of researchers funded increases from 3 000 to 3 612.

The NRF is in the process of developing a funding programme specific to historically disadvantaged institutions (HDIs), which will seek to capitalise on all available grant funding within the Department of Higher Education and Training (DHET). However, this programme will only take effect in 2024/25. It will be geared toward (i) supporting the improvement of research infrastructure at HDIs, (ii) providing effective research development opportunities for academics at HDIs, and (iii) leveraging the NRF’s established regional and international collaborations and partnerships to support the identified research areas of these institutions.

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

* Through the new South African Isotope Facility, foreign income from the sale of radioisotopes is projected to increase from R162 million to R234 million. Patient doses are also projected to increase from 200 000 to 220 000.

Strategic initiatives that will be undertaken in 2023/24 include:

* Developing and implementing the NRF Research Framework that will be aligned to the STI Decadal Plan Priorities.
* Implementing the MeerKAT Extension Project.
* Rolling out the work packages for the construction of SKA1-MID.
* Installing the Near-Infra-Red Arm of the Southern African Large Telescope.
* Improving and rationalising strategic investments in the South African Research Chairs Initiative (SARChI) and Centres of Excellence (CoEs) for better alignment with the STI Decadal Plan.

The NRF projects that its total revenue for 2023/24 will be R5.9 billion and will be constituted by:

* Parliamentary grant of R1 billion (17%), which is the baseline income used for the essential operations of the NRF and which has not kept up with inflation;
* Contract funding received from the DSI of R4.2 billion (72%);
* Contract funds from other government departments, entities and private institutions of R539 million (9%); and
* Income generated through sales and interest income of R142 million (2%).

The significant growth in capital expenditure in 2023/24 is driven by the R1.3 billion for the SKA building requirements, which includes the Science Processing Centre, Regional Centre, SKA Science Operations Centre, SKA Engineering Operations Centre, MeerKAT National Park fencing, the MeerKAT extension, and preparatory costs for the SKA1-MID build. Additional infrastructure projects from new sources of funding include the SARIR requirements, the South African Polar Research Infrastructure and the Northern Cape Visitors’ Science Centre.

* 1. **South African Council for Natural Scientific Professions (SACNASP)**

The Natural Scientific Professions (NSP) Act (No. 27 of 2003) provides for the establishment of the South African Council for Natural Scientific Professions and legislates the registration of professional natural scientists and technologists, and scientists- and technologists-in-training. The 2003 Act, which mandates compulsory registration, replaced the Natural Scientific Professions Act of 1993, which recommended voluntary registration. The key reasons for registering natural scientists are:

* These professionals provide a service to the public, and the public have a right to be protected from malpractice; and
* The profession should be protected by ensuring that acceptable standards of training, and proper conduct, are maintained.

The Council’s performance for 2023/24 focuses on the following areas as captured in its strategic objectives:

**To proactively advise government and relevant stakeholders on the contributions and role of the Natural Scientific Professions in South Africa.**

The focus will be on completing the first draft of the report titled; “*The skills and competencies required for the future natural scientist amid societal grand challenges in South Africa”*.

**To enforce high professional and ethical standards for the natural scientific workforce.**

The focus continues to be on registering 1 500 scientists per annum over the medium-term and the timeframes to process these registrations. Attention is also given to ensuring that SACNASP retains 80% of the scientists that are registered.

**To promote the natural science professions and science engagement in South Africa.**

The number of public awareness and engagement initiatives conducted remains at eight per annum over the medium-term.

**To promote the professional development and transformation of the natural science sector in South Africa.**

The focus continues to be on creating an environment for lifelong learning for professionals. Hence, the increasing proportion of registered scientists, as well as women and youth, participating in Continuing Professional Development courses, student enrolment programmes and SACNASP’s Candidate Mentoring Phase programme will be used to measure performance.

**To foster a culture of good corporate governance.**

The focus will be to ensure compliance with legislative and policy frameworks.

Strategic initiatives that will be undertaken in 2023/24 include:

* + - * Tracking the unemployment of natural science graduates to gain insight into areas where the State can intervene.
			* Increasing the involvement of natural scientists in the DDM (initial undertaking of research).
* Enhancing public awareness campaigns and the active involvement of natural scientists and their Voluntary Associations to offer specialist advice to district municipalities.
* Progressing on the amendment of the NSP Act.

The Council’s key expenditure areas relate to registration, regulation and outreach activities, while it derives income from application and registration fees. In terms of income, the economic downturn over the last three years has resulted in some job losses in the scientific community. Hence, SACNASP has continued to experience issues with registered scientists struggling to meet their annual obligation to pay registration fees. The non-payment of annual registration fees is of concern, since these fees are SACNASP’s principal source of income.

The Council projects its 2023/24 budget to total R28.7 million, comprising mainly revenue from scientists’ registration fees (approximately 65%), contract income from the DSI, which amounts to R30 million over the years 2020 to 2025. The funds allocated by DSI are used for:

* + - * Promoting the Continuing Professional Development programme to enhance professional skills and knowledge.
			* Maintenance and support of IT.
			* Implementation of the Candidate Mentoring Programme for young natural science graduates.
* Regulation of the natural science profession.

Although SACNASP has implemented plans to address bad debt (recovered R1.7 million to date) and the retention of registered scientists, SACNASP does require additional funding. In addition, SACNASP is experiencing high staff turnover due to low remuneration levels and; hence, key departments remain inadequately staffed. The Council is currently exploring, with the Department, the possibility of moving from project-based funding to receiving a Parliamentary grant.

* 1. **South African National Space Agency (SANSA)**

The legislative mandate is premised on two primary Acts; namely, the Space Affairs Act (No. 84 of 1993) and the South African National Space Agency (SANSA) 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 DSI, 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 Systems (SAEOS) Strategy provide directives that directly inform the operationalisation of the South African space programme, inclusive of the role that SANSA should play.

Key developments in relation to the National Space Strategy is the completion of the Regional Space Weather Centre in 2022, the allocation in 2023/24 of R775 million for the Space Infrastructure Hub and the development of a node for NASA’s Deep Space Network in Matjiesfontein in the Central Karoo District Municipality.

The Space Agency identified six key outcomes in its revised 2020-2025 Strategic Plan to move towards stimulating a capable and globally competitive South African space sector and these are central to the implementation of the 2023/24 APP. Performance against these outcomes is accomplished through SANSA’s five programmes; namely, Administration, Earth Observation, Space Science, Space Operations and Space Engineering. The six strategic outcomes are:

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

The Space Agency will aim to attain a national research productivity score for supported R&D of 1 500 (down from 1 715 as listed in the 2022/23 APP).

**Outcome 2:** **Stimulated and growing, inclusive space sector.**

The Space Agency aims to spend 30% of its operational expenditure SMMEs and increase its space industry expenditure from R61 million to R647 million (significant increase due to Space Infrastructure Hub allocation, decreasing again significantly in the two outer years of the MTEF).

**Outcome 3:** **Increased human capacity for the implementation of key space initiatives.**

The aim is to engage 45 000 youth and continue to support, through formalised training, 72 students and interns (down from 92 as listed in the 2022/23 APP).

**Outcome 4: SANSA positioned as a key enabler for the implementation of government’s space-related policies.**

The aim is to implement initiatives that will enhance SANSA’s performance; grow its national, regional and international partnerships; and increase awareness and use of SANSA’s space-related products and services. No significant changes in planned performance are recorded.

**Outcome 5: Enabling infrastructure developed and upgraded to support the space sector.**

Performance hinges on progress made in relation to strategic infrastructure projects; namely, the Space Infrastructure Hub, the Matjiesfontein Deep Space Facility and Houwteq Assembly Integration and Testing (AIT) Facility.

**Outcome 6: Increased participation of the national space programme in the regional and global space market.**

Performance hinges on the number of space products and applications generated (7), as well as the revenue generated from space operations (R75 million).

SANSA estimates its total revenue for 2023/24 to be R1.1 billion due in large part to the R775 million allocated for the Space Infrastructure Hub. The Space Operations (R354 million) and Space Engineering (R564 million) programmes are allocated the lion’s share of SANSA’s budget. Capital expenditure is projected to be R758 million in 2023/24, which is a significant increase from the R153 million spent last year. However, capital expenditure reduces to R406 million and R29 million in the outer years as the Space Infrastructure Hub construction is completed. In this regard, the lack of operational funding to sustain infrastructure after it has been constructed, remains a perennial challenge.

* 1. **Technology Innovation Agency (TIA)**

The Technology Innovation Agency was established through the TIA Act (No. 26 of 2008) and mandated to translate a greater proportion of publicly funded research into commercial technology products and services. Hence, TIA was established to promote the development and utilisation, in the public interest, of discoveries, inventions, innovations and improvements. The objective of 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.

The Technology Innovation Agency’s 2020-2025 Strategic Plan seeks to reposition TIA within the NSI and rests on three pillars. Firstly, it seeks to direct a greater proportion of its resources towards the translation and commercialisation of publicly financed IP emanating from higher education institutions and science councils. Secondly, there is a specific focus on implementing the Bio-economy Strategy, thereby deriving greater socio-economic value from South Africa’s unique biological resources, historical biotechnology investments and bio-based capabilities. Thirdly, TIA aims to foster an enabling environment for innovation, with a specific focus on driving transformation and ensuring inclusion through the provision of science, engineering, technology and enterprise development services. These three pillars form the basis of TIA’s three strategic outcomes against which performance is measured. In this regard, there are no significant changes from previous years.

**Outcome 1: Commercialised innovations.**

The aim is to support the translation of locally developed technology and IP generated from public funds into commercialised innovations. Hence, performance hinges on the number of technologies licensed/assigned and diffused; the number of projects with industry, the number of products launched and the revenue generated from commercialised innovations.

**Outcome 2: Delivering on the Bio-economy Strategy.**

The aim is to support the translation of bio-based knowledge resources into sustainable bio-based solutions. Hence, performance hinges on the number of bio-based technologies demonstrated and the number of Technology Platforms and Technology Innovation Clusters managed and supported.

**Outcome 3: SMMEs supported through strategically informed and regionally distributed Technology Stations.**

The aim is to promote the growth of SMMEs and cooperatives and to contribute to innovation-led industrialisation processes.

Hence, performance hinges on the number of new technology and innovation support centres established, the number of SMMEs and cooperatives supported, the number of postgraduate students supported, the number of innovation products produced and the amount of funds leveraged.

Strategic initiatives that will be undertaken in 2023/24 include:

* Develop and implement a TIA Commercialisation Strategy.
* Secure Public Finance Management Act (PFMA) section 54 exemptions.
* Implement Initiatives to support the Just Energy Transition.
* Support implementation of the Hydrogen Society Roadmap.
* Establish a focused Bio-entrepreneurship Programme.
* Implement a Cannabis Industry Builder Programme.
* Launch specific transformation Funds for Women, Youth and Persons with Disabilities.
* Implement the Strategic Stakeholder Engagement Framework.

For 2023/24, TIA estimates that its total revenue will be R616.2 million, with R460 million being allocated by the Department and an additional income target of 145.6 million. In terms of investments, Bio-economy is allocated R210.8 million, Technology Stations R92 million, Commercialisation R75.6 million and Innovation Enabling R62.2 million.

1. **COMMITTEE OBSERVATIONS**

In concluding its deliberations on Budget Vote 35: Science and Innovation, the Committee commended the Department and the entities for the work they do and for formulating coherent strategies and performance plans. Stemming from its engagement with the Department and entities, the Committee noted the following:

* 1. The appointment of new Chief Executive Officers (CEOs) at the HSRC and SANSA, and new Boards at the CSIR, NACI and NRF was welcomed.
	2. The long-standing Acting CEOs at NACI and TIA, and the vacant post of the Deputy Director-General for Programme 2: Technology Innovation remains a concern.
	3. The finalisation and adoption by Cabinet, as well as the start of implementation, of the STI Decadal Plan was welcomed.
	4. The current impact being realised from the country’s investment in STI is aligned to the available skills and funding, and prevailing enabling conditions governing the NSI. It is not the level of impact envisaged by the NDP for the NSI.
	5. Notwithstanding severely limited budgets, the 2023/24 Annual Performance Plans of the Department and entities set targets that were closely aligned to national strategic objectives.
	6. The existing partnerships and areas of collaboration between the Department and entities were welcomed.
	7. The number of internal and external review processes undertaken by the Department and entities in an attempt to address certain shortfalls, streamline and optimise functions and operations in line with the principles of the STI Decadal Plan was welcomed.
	8. In addition, these reviews have proposed that legislative amendments are necessary to improve the operation and functions of the National Advisory Council on Innovation, Academy of Science of South Africa and the South African Council for Natural Scientific Professions.
	9. Moreover, it is acknowledged that successful implementation of the interventions of the STI Decadal Plan is based on the collective action and financing of these interventions by all spheres of government. Without this needed collective action, adoption and financing, the intended outcomes and impact of the country’s investment in STI will not be fully realised.
	10. The Department and entities record of attaining good financial and administrative governance outcomes is commendable; however, it is imperative that the work undertaken must be of relevance to the lived realities of citizens and address national challenges.
	11. The work of the Human Sciences Research Council around community innovation and inclusion was commended. In this regard, a Community of Practice focusing on Disability and Employability was formed, which then provided guidelines for the recruitment process of interns with disabilities, as well as assisted with identifying potential host institutions for these interns.
	12. The efforts of the Department and entities to all have focused programmes on skills development; transformation; science engagement; the inclusion of women, youth and persons with disabilities; SMME support and advice on the role of STI in development, among others, were commended.
	13. The continued negative impact of the PFMA’s procurement regulations on the ability of the entities to contract with the state in areas for which the entities are funded from the fiscus to have national competence. The resultant loss of revenue from public sector contact income, on which the entities are greatly dependent, has been estimated to cost the Council for Scientific and Industrial Research approximately R400 million in revenue annually.
	14. Furthermore, requests from entities to be designated as preferred service providers in areas where these entities are funded from the fiscus to have national competence, have been consistently denied by National Treasury.
	15. The continued decline in business expenditure on R&D (BERD) remains a concern.
	16. Hence, the extension, for another 10 years, of the R&D Tax Incentive Programme that provides tax concessions to the private sector for investing in scientific and technological R&D was welcomed.
	17. Furthermore, the continued decline of gross domestic expenditure on R&D (GERD) to 0.61% is of great concern, pushing the NDP target of 1.1% by 2024 further out of reach.
	18. Due consideration should be given to harnessing/attracting additional private capital, both national and foreign. However, the Department and entities must still be resourced at a level that adequately supports the national agenda and allows negotiations to be undertaken on an equal footing.
	19. Despite the weak economic outlook, the Committee remains gravely concerned by the current level at which STI is resourced by the national fiscus, the low level of STI adoption across government and industry, the dearth of critical science, technology and engineering skills needed by the economy, and how these relate to the expectations around the role of STI in socio-economic development.
	20. Furthermore, the current challenges around funding, skills and STI adoption have far-reaching consequences for the retention of existing skills, infrastructure and capability. Which if lost, will cost exorbitantly more to re-establish than what it would currently cost if adequately resourced; negatively affecting the country’s development objectives and its ability to stay abreast of future global developments.
	21. Hence, the reports of ageing infrastructure and inadequate capital budgets to refurbish and maintain these, and the potential eroding/loss of STI capability in key disciplines, elicited a great deal of apprehension from the Committee.
	22. Loadshedding is negatively affecting the operations and functions of the entities, especially around infrastructure and R&D, increasing the risks and costs to these facilities. The Council for Scientific and Industrial Research estimates that it needs approximately an additional R61 million in the short- to medium-term to mitigate the negative impact of loadshedding. Whereas, the South African National Space Agency’s Hartebeesthoek Space Operations facility spends approximately R1.2 million per month on diesel to continue operating during loadshedding.
	23. The Department and entities, due to a lack of resources, are struggling to implement the digital transformation of systems and processes to leverage technology to enhance agility and efficiency.
	24. The first-time allocation of R775 million for the development of the Space Infrastructure Hub was welcomed, as this infrastructure is critical for implementing the national space programme and enhancing support for the local space industry.
	25. The allocation of the needed R65 million to fence the MeerKAT National Park was welcomed, as the lack of a fence and its intended purpose to control predator access from the Park to surrounding farms, was an area of key contention between the SKA and farmers.
	26. The continued lack of capacity within the STI system, especially around women who also mostly occupy the lower ranked roles in scarce skills disciplines, the competition for existing skills and the inability of the system due to its small size and lack of resources to absorb the available skills, remains a concern.
	27. Therefore, the staff turnover and vacancy rates of the Department and entities, especially at senior management level and for critical skills, remains a concern.
	28. Another concern is that entities like the National Advisory Council on Innovation and Technology Innovation Agency cannot fully implement their mandates due to small staff complements and limited skills.
	29. A large concentration of research funding, as well as Research Chairs, reside with what is called the “top five” universities. Hence, new plans by the National Research Foundation to support specifically HDIs were welcomed.
	30. Interventions to enhance the STI skills of TVET college graduates were welcomed.
	31. In relation to skills development, of concern was that, the National Research Foundation can only fund 35% of the qualifying applications for postgraduate bursaries, and requires an additional R1.3 billion for bursary support alone. If it were to meet the target set by the NDP, it would need an additional R2 billion for postgraduate funding support. The National Research Foundation also needs an additional R1 billion to fund all the qualifying applications for research grants.
	32. The continued limited support for technology development and commercialisation, where recent data show that Public Research Institutions need an additional R575 million over the next two years for this remains a concern.
	33. The plans to establish or enhance commercialisation units within the entities were welcomed. Especially if these result in a greater degree of commercialisation of locally developed intellectual property and technology.
	34. The increase in allocation to and reconfiguration of the South African Agency for Science and Technology Advancement, responsible for coordinating and implementing the new science engagement framework, was welcomed.
	35. Furthermore, the use of English, which dominates both science and science communication, excludes and disadvantages a large number of the population from engaging with STI.
1. **COMMITTEE RECOMMENDATIONS**

The Portfolio Committee on Higher Education, Science and Innovation, having considered Budget Vote 35: Science and Innovation, recommends that:

* 1. As the new CEOs and Boards plan to deliver on their mandates, they ensure that the work undertaken continues to positively address national challenges and that specific consideration is given to transformation and the inclusion of women, youth and persons with disabilities.
	2. Government, through the IMC on STI and STI Budget Coordination Mechanism continue efforts to increase gross expenditure on R&D as a percentage of GDP to ensure that the NSI is resourced adequately to fulfil the objectives as envisioned by the NDP. Furthermore, plans should be formulated to:
		1. Address the identified funding shortfalls; for example, the additional R1.3 billion and R 1 billion needed per year by the National Research Foundation to fund all qualifying bursary and research grant applications respectively, and the R575 million needed across Public Research Institutions to support technology development and commercialisation.
		2. Address inadequate capital budget allocations so that existing infrastructure remains operational and can be upgraded as needed.
		3. Ensure that new infrastructure not only receives adequate funding for its establishment, but continued operations and maintenance as well.
		4. Arrest the further erosion of critical STI skills and capabilities.

A written report detailing how these funding challenges will be addressed should be submitted to the Committee.

* 1. The Minister, Department, affected entities and National Treasury work toward a solution around the continued negative impact of the PFMA’s procurement regulations on the ability of the entities to contract with and earn needed income from the state. This should also address the rejection, by National Treasury, of applications by the entities to be designated as preferred service providers in areas where these entities are funded from the fiscus to have national competence. A written report detailing these engagements, as well as the agreed upon resolutions, should be submitted to the Committee.
	2. Through the implementation of the STI Decadal Plan and despite the constrained funding and skills environment, the performance targets of the Department and entities should be enhanced and the research agenda must address national challenges. In addition, the Department and entities should explore ways to expand their provincial footprint and presence.
	3. Where effort is expended on similar actions (doubling up) to ensure greater impact, due attention should be given to ensure that duplication of tasks, that could be centralised, was averted. For example, the Committee recommends that the Department / National Research Foundation consider a central application portal for all the bursaries that are awarded across the STI portfolio of entities.
	4. With regard to performance target setting, greater collaboration with provincial and local governments should be pursued. Additionally, when deciding on and designing interventions aimed at inclusive development, community inclusion in all processes was imperative.
	5. Where the Department and entities invest in interventions aimed at inclusive development, science engagement and STI support, attention should be directed at ensuring that these investments are being used/implemented as intended.
	6. Be it for staff employment or for inclusion in interventions, the Department and entities should adhere to national targets set for the inclusion of women, youth and persons with disabilities. Additionally, directed actions, such as the Community of Practice focusing on Disability and Employability that was formed by the HSRC, need to be undertaken to ensure that these targets are met. Furthermore, to avoid the duplication of effort, the lessons learned and resources identified by such instruments should be rolled-out across the portfolio, since meeting performance targets set for designated groups is a system-wide challenge.
	7. The Department, South African National Space Agency, Department of Public Enterprises, Denel (Pty) Ltd and other stakeholders should expedite the migration of the Houwteq Assembly, Integration and Testing (AIT) facility, a key infrastructure critical to the national space programme, from Denel (Pty) Ltd to the South African National Space Agency. A written report detailing these engagements, as well as the agreed upon resolutions, should be submitted to the Committee.
	8. The Department and entities broaden the range of support offered to SMMEs, as not all require financial or technical assistance.
	9. The Department and entities, through the STI Decadal Plan, leverage partnerships with industry to increase support for SMMEs and to enhance commercialisation of locally developed technology.
	10. The Department, Council for Scientific and Industrial Research and Technology Innovation Agency prioritise assistance for the development and commercialisation of grassroots innovations that will assist people in their daily lives and contribute to alleviating poverty and unemployment.
	11. The Departments of Science and Innovation, and Higher Education and Training and the Technology Innovation Agency establish a partnership to enhance entrepreneurial development in the post-school education and training sector.
	12. The Minister and Departments of Science and Innovation, and Higher Education and Training should continue to align and enhance their plans around skills development, coordination and support; as well as around plans to ensure that critical skills are retained and supported.
	13. 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.
	14. The Department and entities should lead in how to cost effectively and with due regard for the Just Transition, mitigate the negative effects of loadshedding on its operations and functions.
	15. The Department submits a written report on the findings, the status of recommendations that have been accepted for implementation and the reasons for rejecting certain recommendations of the various institutional reviews that have been completed; namely for the National Advisory Council on Innovation, Technology Innovation Agency, South African National Space Agency, Academy of Science of South Africa and the South African Council for Natural Scientific Professions.
	16. The Department submits a written report on the status of the amendments to the National Advisory Council on Innovation, Academy of Science of South Africa and Natural Scientific Professions Acts. The report should include the impact of the amendments, as well as when these amendment bills will be gazetted for public comment.
	17. The Department and entities should continue to explore mechanisms to better track and report on the impact of STI, despite the complexities associated with measuring and defining STI impact, so that the relevance of this investment is more broadly 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.
	18. Science engagement, communication and outreach must address the relevance of STI to socio-economic development, be considerate and inclusive of diverse audiences (especially language and geographic location) and address the low level of scientific literacy and awareness across many communities.

The Minister and 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 reserves their opinion on the Budget Report.

**Report to be considered.**

1. The calculations are based on a projected inflation rate of 4.9%. [↑](#footnote-ref-1)