**Report of the Select Committee on Education and Technology, Sports, Arts and Culture on Budget Vote 35: Science and Innovation, dated 22 June 2022**

The Select Committee on Education, Technology, Sports, Arts and Culture(hereinafter referred to as the Committee), having considered Budget Vote 35: Science and Innovation and the 2022/23 Annual Performance Plan (APP) of the Department of Science and Innovation (hereinafter referred to as the Department or “DSI”), reports as follows:

**1. Introduction**

The purpose of this report is to account for work done by the Committee in considering the 2022/23 Annual Performance Plan (APP) and budget of the Department in accordance with Section 27(1) of the Public Finance Management Act, 1999 (Act. No 29 of 1999), and as referred by the Chairperson of the National Council of Provinces (NCOP) to the Committee in terms of Rule 338 for consideration and reporting.

The 2022/23 APP and budget of the Department was considered against the background of key government policy documents, including, amongst others, the National Development Plan (NDP); the 2019 – 2024 Medium Term Strategic Framework (MTSF); the 2019 White Paper on Science, Technology and Innovation; the Economic Reconstruction and Recovery Plan; as well as the 2022 State of the Nation Address (SONA).

The Committee considered the Budget and the 2022/23 APP of the Department on Wednesday, 08 June 2022. The budget review briefing served to acquaint the 6th Parliament Select Committee with the mandate, programmes and priorities of the Department.

This report, therefore, gives a brief summary of the presentation made by the Department to the Committee, focusing mainly on the 2022/23 Annual Performance Plan and the 2022 Medium Term Expenditure Framework (MTEF) allocations. The report also provides the Committee’s key deliberations and recommendations relating to Budget Vote 35.

**2. Budget Vote 35: Science and Innovation**

In his weekly newsletter in January 2022, the President of the Republic of South Africa, His Excellence, Mr Matamela Cyril Ramaphosa (Hereafter referred as the “President”) stated that science and technology have a key role to play in the country’s economic recovery; in attracting greater levels of investment; and in contributing to skills, knowledge and technology transfer to capacitate the country’s workforce. The President further stated that investment in science, technology and innovation (STI) to revitalise and modernise existing industries, as well as create new sources of growth and stimulate industrialisation, is therefore being prioritised. In the 2022 State of the Nation Address (SONA), the President stated that the overriding priorities of 2021 remain. These are the following:

* Overcoming the coronavirus pandemic;
* The massive rollout of infrastructure;
* A substantial increase in local production;
* An employment stimulus to create jobs and support livelihoods; and
* The rapid expansion of energy generation capacity.

In relation to the challenges facing the country, STI is central to finding solutions to most of these and the President enumerated a number of examples. For instance, the strides made through the Hydrogen South Africa Strategy to position the country within the global hydrogen economy; the development of local capability in vaccine and ventilator production; and the technical expertise developed in agro-processing and renewable energy.

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

Over the medium-term, the Department will focus on developing human capital, ensuring the effective use of publicly funded intellectual property, implementing the national space strategy, and implementing the national integrated cyberinfrastructure system (NICIS). The Department’s allocation, over the medium term, is expected to increase at an average annual rate of 2.4%, from R9 billion in 2021/22 to R9.7 billion in 2024/25. Transfers to entities account for an estimated 93.7% (R26.3 billion) of the Department’s expenditure over the MTEF period. The Department’s second‐largest cost driver is compensation of employees, where spending is set to increase at an average annual rate of 1%, from R363.3 million in 2021/22 to R374.5 million in 2024/25.

The Research and Development Tax Incentive will be extended in its current form until 31 December 2023 to allow for certainty and planning while National Treasury continues its stakeholder engagement process during 2022 on the future continuation of the incentive. The extension and potential amendments are included in the 2022 Taxation Laws Amendment Bill.

**2.1. 2022/23 Medium-Term Expenditure Framework (MTEF) Budget: Vote 35**

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

Notable changes in the 2022/23 budget allocation to transfers and subsidies include the following:

* **Transfers and subsidies to Departmental agencies and accounts (current payments)**
* The allocation for Innovation projects research increases from R402.4 million to R519.4 million.
* The allocation for Space science research from the Economic Competitiveness and Support Package (ECSP) decreases from R63.3 million to R33.3 million.
* The allocation to various institutions for Astronomy R&D increases from R25.6 million to R41.7 million.
* The allocation to various institutions for Strategic science platforms for R&D increases from R170.2 million to R241.3 million.
* The allocation to various institutions for Innovative R&D decreases from R77.2 million to R49.6 million.
* The allocation to various institutions for Environmental innovation decreases from R87.7 million to R34.2 million.
* **Transfers and subsidies to Departmental agencies and accounts (capital payments)**
* The allocation to various institutions for Infrastructure projects for R&D increases from R758.3 million to R861.6 million.
* The allocation to the National Research Foundation (NRF): Square Kilometre Array Capital contribution to research decreases from R1 billion to R830.2 million.
* **Transfers and subsidies to Non-profit institutions (current payments)**
* The allocation to various institutions for Health innovation research decreases from R87.5 million to R54.9 million.

**Table 1 below depicts the budget summary of the Department of Science and Innovation:**

**Table 1: Summary of the Department of Science and Innovation budget:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Programme** | **2021/22 Adjusted appropriation**  **(R’ million)** | **2022/23 Budget allocation**  **(R’ million)** | **Percentage of total budget** | **Nominal percentage change in 2021/22** | **Real percentage change in 2022/23 (inflation-adjusted)** | **Number of performance targets** |
| 1. Administration | 334.7 | 335.1 | 3.7 | 0.1 | -4.2 | 5 |
| 2. Technology Innovation | 1 705.3 | 1 784.1 | 19.5 | 4.6 | 0.1 | 18 |
| 3. International Cooperation and Resources | 144.4 | 149.9 | 1.6 | 3.8 | -0.7 | 9 |
| 4. Research, Development and Support | 4 995.6 | 5 105.0 | 55.9 | 2.2 | -2.2 | 14 |
| 5. Socioeconomic Innovation Partnerships | 1 825.6 | 1 759.2 | 19.3 | -3.6 | -7.8 | 10 |
| Total | 9 005.6 | 9 133.3 | 100% | 1.4% | -2.95% | 56 |

**2.2. Programme analysis**

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; and
  + Programme 5 – Socio-economic Innovation Partnerships.

The above 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 94.7% of the Department’s total budget allocation.

For the 2022/23 financial year, the Department has translated its planned performance into 56 performance indicators and targets.

* + 1. **Programme 1: Administration**

Programme 1 provides strategic leadership, management and support services to the Department and is responsible for five of the Department’s 2022/23 performance targets. Programme 1 supports two of the six departmental outcomes, namely, a transformed, inclusive, responsive and coherent NSI, and innovation in support of a capable and developmental state. It has four sub-programmes; namely, Ministry, Institutional Planning and Support (IPS), Corporate Services (CS) and Office Accommodation.

Programme 1’s R335.1 million represents, when adjusted for inflation, a real decrease of 4.2%. The allocation will mainly be spent on salaries (R172.7 million) and on Goods and services (R143.7). 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. Notable budget allocations under Goods and services include R15.9 million for Consultants, and R36.8 million for Travel and subsistence. Programme 1 administers and funds the operations of National Advisory Council on Innovation (NACI) and transfers R15.7 million to Non-profit institutions for Institutional and programme support research.

The Department has a total staff establishment of 382, with 114 staff members holding a Master’s degree and 22 staff members holding a Doctor of Philosophy (PhD) degree. As at 30 September 2021, the Department had a vacancy rate of 23.3%, of which 17.4% is at the senior management level. The Department aims to have 94% of all approved and funded prioritised posts filled by 31 March 2023. 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, as well as the high vacancy rate, the Department is advancing a structural review of the current 2014 approved organisational structure over the medium term.

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

Programme 2 enables Research and Development (R&D) in space science and technology (S&T), energy security, the bioeconomy, and in the areas of nanotechnology, robotics, photonics and indigenous knowledge systems (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 of the Department’s 2022/23 performance targets. Programme 2 supports five of the six departmental outcomes, namely, (i) A transformed, inclusive, responsive and coherent NSI; (ii) Human capabilities and skills for the economy and for development; (iii) Increased knowledge generation and innovation output; (iv) Knowledge utilisation for economic development in (a) revitalising existing industries and (b) stimulating R&D-led industrial development; and (v) Knowledge utilisation for inclusive development. Programme 2 has five sub-programmes and one specialised service delivery unit (SSDU). These are Space Science, Hydrogen and Energy, Bioinnovation, Innovation Priorities and Instruments (IPI), the Office of the Deputy Director-General (DDG), and the National Intellectual Property Management Office (NIPMO).

Programme 2 receives R1.78 billion of the Department’s total allocation. 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. In addition, it is the only sub-programme to receive a real increase to its allocation, growing in real terms by 9.4% (46.7% real increase in 2021/22 and 35.3% in 2020/21 before the two budget adjustments). The allocations to the Space Science and NIPMO sub-programmes decrease, with Space Science receiving R69.7 million less than in 2021/22.

Approximately 96% (R1.7 billion) of Programme 2’s budget is allocated to Transfers and subsidies, with the Technology Innovation Agency (TIA) and South African National Space Agency (SANSA) receiving R458.4 million (R447.7 million in 2021/22) and R162.4 million (R202.2 million in 2021/22), respectively. Space science research is also allocated R33.3 million from the Economic Competitiveness and Support Package (ECSP). The stated emphasis on innovation reflects in a transfer to Departmental agencies: Various institutions for Innovation projects researchamounting to R1.6 billion over the medium term, with the 2022/23 allocation being R519.4 million; a significant increase from the 2020/21 allocation of R125 million and a further significant increase from the 2019/20 allocation of R14.9 million.

Strategic policy initiatives that will receive specific attention over the medium term include continuing the work to establish the Innovation Fund, which will support the commercialisation of locally developed IP. In addition, the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR Act) will be amended.

New performance indicators introduced from 2022/23 include:

* 15 University of Technology (UoT) and Technical and Vocational Education and Training (TVET) college graduates offered experiential learning opportunities in the energy sector by 31 March 2023;
* 40 unemployed youth supported under the Technology Top 100 (TT100) Learnership/Internship Programme by 31 March 2023; and
* 1000 youth engaged through outreach, awareness and training programmes in space science by 31 March 2023.
  + 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, with a focus on supporting STI capacity building in Africa. It is responsible for nine of the Department’s 2022/23 performance targets. Programme 3 has four sub-programmes; namely, Multilateral Cooperation and Africa, International Resources, Overseas Bilateral Cooperation and the Office of the Deputy Director General (DDG).

Programme 3 receives R149.9 million of the Department’s total allocation and the percentage distribution of the allocation between sub-programmes stays the same as in previous financial years. The allocation to Multilateral Cooperation and Africa increases in real terms by 7%. Whereas, the other sub-programmes all receive below inflation increases. Transfers and subsidies amount to R76.4 (R74.5 million in 2021/22), comprising R17.1 million for the National Research Foundation (NRF), who manages Bilateral cooperation for global science development agreements on behalf of the Department; R48.6 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, where International multilaterals received approximately R5.1 million and African multilaterals received R200 000.

* + 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 14 of the Department’s 2022/23 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.

Programme 4 is allocated R5.1 billion of the Department’s total allocation. The increase in Programme 4’s budget, once adjusted for inflation, represents a real decrease of 2.2%. The significant increase in the allocation to Basic Science and Infrastructure is driven largely by the ongoing development of the National Integrated Cyber Infrastructure System (NICIS) that will enable the successful and sustainable implementation of national projects such as MeerKAT and the Square Kilometre Array. To this end, R3.7 billion is allocated over the medium term to this sub-programme.

In terms of economic classification, Transfers and subsidies constitute 98.9% (R5 billion) of Programme 4’s total budget with Academy of Science of South Africa (ASSAf), the NRF and the Council for Scientific and Industrial Research (CSIR) receiving R33.8 million, R3.5 billion and R281.8 million, respectively. Of concern, is the decrease in allocation, from R1 billion to R833.7 million to the Astronomy sub-programme. The Committee learnt in January 2022 during its oversight visit to the Northern Cape that the Square Kilometre Array has an approximate R2 billion funding shortfall over the medium-term.

Strategic initiatives that will receive specific attention include developing a policy framework for the establishment of a South African Research Cloud in line with the National Open Science Policy; implementing the new Transformation and Postgraduate Funding Policies; implementing the reporting framework on postgraduate support across all DSI programmes; undertaking a consultative process for the development of an Astro-Tourism Strategy; and reviewing the astronomy institutional landscape with a view to establishing an Astronomy Institute.

New performance indicators introduced from 2022/23 include:

* 300 emerging researchers awarded research grants as reflected in the NRF project reports by 31 March 2023.
* 200 black and female emerging researchers awarded research grants as reflected in the NRF project reports by 31 March 2023.
  + 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 10 of the Department’s 2022/23 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.

Programme 5 receives R1.76 billion of the Department’s total budget allocation, and is the only Programme that receives less than its 2021/22 allocation, which decreases by 7.8% in real terms. The allocation to all the sub-programmes decreases. This is due to the withdrawal of the funding from the Economic. Competitiveness Support Package (ECSP). Approximately 96.8% (R1.7 billion) of Programme 5’s budget is allocated to Transfers and subsidies, with the Human Sciences Research Council (HSRC) and CSIR receiving R336.7 million and R1.07 billion, respectively.

**3. Committee Observations**

The Committee, having considered and deliberated on the budget and Annual Performance Plan 2022/23 of the Department of Science and Innovation made the following key observations and findings:

* Members noted with concern the fact that the Department did not have a permanent Chief Executive Officer (CEO) and enquired when this appointment would happen.
* Members wanted to know plans in place for research on alternative sources of energy, since the country is in crisis, especially with electricity.
* Members further queried plans in place for internet connectivity bandwidth, especially in rural and underdeveloped areas.
* Members requested a progress update regarding the Department’s PhD programme created specifically to fund women.
* Members also requested progress regarding the Technology Innovation Agency.
* Members asked how the Department planned to ensure that the STI plans are implemented and coordinated within the stated timeline.
* A question was raised as to what factors informed the removal of three outcome indicators in the Strategic Plan and whether there was funding available to continue with this programme.
* Members questioned timeframe and progress on the DSI Transformation Framework.
* Members also wanted to know the Department’s plans to create a programme for funding of innovative young people showcasing their talents on social media, especially those in rural areas.
* Members entrusted the Department to ensure that all its information is public knowledge and questioned its capacity in terms of outreach.

**4. Responses from the Department**

The Department gave the following responses:

* Regarding the request for a programme to fund young innovators, the Department has several programmes focusing on that and the most outstanding one is the Grassroots Programme. There is an application process where young people submit their innovations and the Department chooses the most innovative submissions. So far, they have funded over 115 people and co-founded them with other departments.
* On the Transformation Framework, there is a consensus between the Department and its entities to have ongoing transformation as it is a programme that takes time. Assurance was given to the Committee that the programme had been a success since its start and the Department gathered information to record the progress yearly.
* The Women in PhD programme exists through the other funding programmes the Department has, where they set a target designed to fund only women. The exact number of women funded and who graduated will be sent to the Committee.
* Connectivity in the rural areas is the responsibility of the Department of Communications and Digital Technologies (DCDT) and there is a programme called SA Connect that is responsible for connecting townships and rural areas. The Department acknowledged that there is a challenge with this and they will use its partnership with the DCDT to ensure connectivity.
* Regarding the reduced outcome indicators from 22 to 19, the Department explained that there were some duplicated reports in some districts so they managed the problem by consolidating all the reports without any loss of information.
* Regarding the Grassroots Innovations Programme, the Department ensured that they identified Innovation Champions in municipalities, take the valuable innovations to the district level, and fund the innovator. They had a recent achievement in collaboration with a district in Limpopo where they launched innovation from a small community and partnered with traditional leaders.
* Regarding alternative sources of energy and electricity, the Department funded programmes that focused on having other sources of energy. Examples include but not limited to the Hydrogen Programme, which uses hydrogen to make electricity and the Solar Programme which focuses on the sun for energy. An Energy Storage programme also focuses on making batteries to store energy. Reference was also made to the Carbon Capture Programme. Every province, except the Free State, initiated pilot programs and are in partnership with some companies to create energy.

**5. Committee recommendations**

The Committee, having considered Budget Vote 35: Science and Innovation, together with the Annual Performance Plan of the Department of Science and Innovation recommends the following:

* The Department should consider engaging with the Department of Basic Education to establish concerted efforts to ensure that science and maths related subjects become interesting in schools to support the overall desire of the DSI to increase Human Capital and boost the economic needs of the country there off.
* Same principles should be applied with the Department of Basic Education, Post-school education sector to ensure that there’s growing interest in the enrolments in sciences and more especially in education related degrees to ensure that South Africa does not heavily rely on foreign teachers to deliver STEM subjects in schools.
* The Department should assess the impact of the declining budget on the attainment of its targets especially those in the Decadal Plan and engage the Parliament Committees to advocate for the increase in funding.

**6. Conclusion**

Having satisfied itself in its engagement with the Department of Science and Innovation on their Annual Performance Plan and Budget, the Select Committee on Education and Technology, Sports, Arts and Culture reports that it has finalised its deliberations thereon.

**Report to be considered**.