**6. The Budgetary Review and Recommendation Report of the Portfolio Committee on Science and Technology on the performance of the Department of Science and Technology for the 2015/16 financial year, dated 26 October 2016**

The Portfolio Committee on Science and Technology, having considered the performance of the Department of Science and Technology for the 2015/16 financial year, reports as follows:

1. **Introduction**
   1. **Mandate of the Portfolio Committee on Science and Technology**

The Portfolio Committee on Science and Technology (the Committee) is mandated by the Constitution and the Rules of Parliament to oversee the activities and performance of the Department of Science and Technology (the Department or DST) and the entities that report to it. Hence, the Committee must consider, amend and/or initiate legislation; consider international agreements and provide a platform for the public to participate and present views on issues and/or legislation specific to the science, technology and innovation (STI) system. The entities that reported to the Department during the 2015/16 financial year are the:

* + 1. Academy of Science of South Africa (ASSAf)
    2. Council for Scientific and Industrial Research (CSIR)
    3. Human Sciences Research Council (HSRC)
    4. National Advisory Council on Innovation (NACI)
    5. National Research Foundation (NRF)
    6. South African Council for Natural Scientific Professionals (SACNaSP)
    7. South African National Space Agency (SANSA)
    8. Technology Innovation Agency (TIA)

To enhance Parliament’s oversight role, the Money Bills Amendment Procedure and Related Matters Act (Act 9 of 2009) was promulgated to provide Parliament with a procedure to make recommendations to the Minister of Finance to amend the budget of a national department. A key provision of this Act is that Portfolio Committees must annually compile Budgetary Review and Recommendation (BRR) Reports. These BRR Reports provide an assessment of service delivery performance given available resources; evaluates the effective and efficient use of resources; and may make recommendations on the forward use of resources. The BRR Reports are also source documents for the Committees on Appropriations when they make recommendations to the Houses of Parliament on the Medium-Term Budget Policy Statement (MTBPS).

* 1. **Method to develop the 2016 Budgetary Review and Recommendation Report of the Portfolio Committee on Science and Technology**

In preparation for the BRR Report, the Committee assessed the performance of the Department and the entities by:

* Considering the prevailing Strategic Plans and the 2015/16 budget allocations and Annual Performance Plans;
* Evaluating the 2015/16 quarterly performance and expenditure trends;
* Conducting oversight by having briefings on specific initiatives and programmes, which included site visits;
* Inviting the Auditor-General (AG) to explain the 2015/16 audit outcomes for the Department and the entities; and
* Considering the 2015/16 Annual Performance Reports.
  1. **Mandate of the Department of Science and Technology**

The Department is responsible for developing, co-ordinating and managing the National System of Innovation (NSI) to transform the economy and provide a better life for all South Africans. In fulfilment of this responsibility, the Department, with its entities, seeks to create an environment that promotes innovation; enhances South Africa’s knowledge-generation capacity; develops appropriate human capital in STI; builds and maintains excellent STI infrastructure; and positions South Africa as a favourable location to conduct scientific research and development (R&D).

1. **POLICY CONTEXT AND MANDATE**

Science, technology and innovation are considered crucial for the creation of wealth and improving the quality of life in modern society. Hence, governments, as they strive for equitable and sustainable development, have a duty to create an enabling policy environment to support these goals. In South Africa, the 1996 White Paper on Science and Technology introduced the concept of a NSI as an enabling framework for the development and application of science and technology (S&T) in South Africa. Within this framework, Government (with the line department being the DST) has the sole responsibility for, at the national level, policy formulation and resource allocation; and for regulatory policy-making.

The National Research and Development Strategy (NRDS) and the Ten-Year Innovation Plan (TYIP) are the key drivers of the NSI. The TYIP, particularly, aims to guide the country towards a knowledge-based economy through human capital development (HCD), knowledge generation and exploitation, knowledge infrastructure and enablers to convert knowledge into socio-economic outcomes. The grand challenges outlined in the TYIP comprise the biotechnology and pharmaceutical industry (now referred to as the Bio-economy), space science, energy security and global change. The idea is to have multidisciplinary thinking amongst South African researchers to deal with these challenges in an innovative way that would bring socio-economic changes in this country as it is envisaged in both the National Development Plan (NDP) and the New Growth Path (NGP).

The NDP identifies the need to increase the size, coherence and effectiveness of the NSI to enhance South Africa’s ability to compete globally. Hence, the country must enhance its investment in infrastructure, improve the skills base and ensure that it better exploits the knowledge generated from its investments in research, development and innovation (RDI).

To position STI within the framework of the NDP, the Department directs its efforts and resources toward the following five strategic outcome-orientated goals:

* + Goal 1: Responsive, co-ordinated and efficient NSI – build on previous gains to create a responsive, co-ordinated and efficient NSI.
  + Goal 2: Increased knowledge generation – maintain and increase the relative contribution of South African researchers to global scientific output.
  + Goal 3: Human capital development – increase the number of high-level graduates and improve their representivity.
  + Goal 4: Using knowledge for economic development – derive a greater share of economic growth from R&D-based opportunities and partnerships.
  + Goal 5: Knowledge utilisation for inclusive development – accelerate inclusive development through scientific knowledge, evidence and appropriate technology.
  1. **2014-2019 Medium-Term Strategic Framework**

The 2014-2019 Medium-Term Strategic Framework (MTSF), approved during the 2014/15 financial year, represents the first phase of implementation of the NDP and commits Government to 14 key outcomes. The Programmes and initiatives of the Department and its entities (who are its implementing agencies) either lead or support Outcomes 2, 3, 4, 5, 6, 7 and 10, as well as the Nine-Point Plan. The Square Kilometre Array (SKA) and MeerKAT Telescopes are categorised as Strategic Integrated Project (SIP) No. 16 (a Knowledge SIP) under the National Infrastructure Plan, and is included in Outcome 6. The Nine-Point Plan seeks to stimulate and diversify South Africa’s economy. Specific areas where the Department contributes to the Nine-Point Plan include:

* + Revitalisation of agriculture and agro-processing.
  + Increasing the impact of the Industrial Policy Action Plan (IPAP).
  + Beneficiation of mineral wealth.
  + Unlocking the potential of small business and rural and township enterprises.
  + Growing the oceans economy through Operation Phakisa.
  + Resolving the energy challenge by advancing alternative energy sources.
  + Scaling-up private sector participation in R&D.
  1. **Challenges facing South African STI**

The challenges facing South African STI can be categorised according to three levels, namely, at the NSI, national and global levels.

At the NSI level, the challenges include:

* Inadequate Gross Expenditure on Research and Development (GERD) - the current low economic growth trajectory and declining business investment in R&D makes the 2019 GERD target of 1.5% very difficult to attain.
* Erosion (below inflation increases) of baseline funding of existing public research institutions negatively affects these institutions’ ability to retain and/or attract skilled staff and fulfil their growing mandates.
* Inadequate funding for new institutions such as TIA, SANSA and the National Intellectual Property Management Office (NIPMO). Furthermore, there has been no real growth in the number of public science institutions to reflect the growth of the science system.
* Inadequate levels (both numbers and sectors) of science, engineering and technology (SET) skills, as well as inadequate numbers of scholars leaving basic education with adequate mathematics and science knowledge.
* Maintaining existing and acquiring new research infrastructure, as well as inadequate technology skills to train future technologists.
* Inadequate co-ordination of STI effort across Government.
* Too low rate of innovation and commercialisation. These activities are more *ad hoc* than inherent to the NSI.
* The high cost of access to broadband results in the low usage of Information and Communication Technologies (ICTs) for innovation.

At the national level, the challenges include:

* Low economic growth and declining economic competitiveness.
* The challenges of inequality, poverty and unemployment.
* The cost and sustainability of energy provision.
* The lack of an entrepreneurial culture.
* Low business confidence and investment.
* Poor educational outcomes.
* Environmental concerns associated with increased industrialisation and climate change.
* Decreasing productivity and manufacturing output.
* ICT access and cost.

At the global level, the challenges include:

* The slow recovery and low growth of the global economy.
* Globalisation of R&D is leading to increased competition for STI resources. South Africa’s ability to attract R&D from the global market is directly correlated to the available STI skills and how conducive the environment is for RDI.
* Social and environmental challenges.

Hence, the Department’s key focus areas are:

* Strengthening the STI policy and strategy environment by addressing current gaps; developing the first decadal plan for STI aligned with the NDP; investigating the desirability of a S&T Act and co-ordinating the budget process for STI institutions.
* Increasing public and private sector funding for the NSI, optimising resource deployment and use, and improved intergovernmental co-ordination.
* Enhancing the capacity for monitoring and evaluation of the entire NSI.
* Improving the effectiveness of instruments and incentives to stimulate R&D.
* Increasing support to facilitate the development of provincial and regional innovation strategies.
* Growing access to and ensuring the development, acquisition and deployment of research infrastructure as a necessary enabler for RDI.
* Strengthening South Africa’s regional, continental and international STI partnership portfolio and expanding these beyond research co-operation to focus more on technology and innovation partnerships.
* Strengthening the Department’s science engagement and communication strategy.
* Expanding research capacity by developing human capital and building institutions.
* Enhancing the rate of transformation of the STI sector.
* Commercialising scientific outputs.
* Increasing technological innovation.
* Supporting traditional industry sectors (agriculture, agro-processing, forestry, manufacturing and mining).
* Supporting emerging industry sectors (mineral beneficiation, pharmaceutical manufacturing and greener energy sources).

1. **Summary of previous key financial and performance recommendations of THE PORTFOLIO Committee ON SCIENCE AND TECHNOLOGY**

The Committee’s 2015 BRR Report contained the following recommendations:

* The Committee restates its 2014 BRR Report recommendation that the Minister of Science and Technology facilitates discussions to encourage government to prioritise its commitment towards allocating 1.5% of Gross Domestic Product (GDP) to investment in R&D.
* That the Minister of Science and Technology investigates the development of a policy to establish a centralised research and development budget allocation. This would ensure efficient allocation and spending on science, technology and innovation across all government departments.
* That the 2016 MTEF request of the Department be allocated as submitted, especially the request for inflation plus 2% for the science councils.
* That National Treasury not effect the re-prioritisation of funds, although the Department has identified this.
* That the Department ensure full compliance with legislative prescripts to avoid future findings from the Auditor-General.
* Agencies, such as NIPMO and SANSA, should be adequately funded to ensure improved rates of development, competitiveness, better return on investment, and faster transformation and growth.
* The TIA’s funding should be increased to ensure increased value of research and development investment.
* The NRF’s budget should be increased so that greater numbers of science, technology and innovation graduates can be supported to meet the goals of the NDP.
* That the Department strengthens its efforts to collaborate with other government departments to implement the technology solutions developed by the Department that address service delivery, planning and growth issues.
* That the Department reviews the New Strategic Management Model for Science and Technology to ensure a well-co-ordinated and improved allocation process for science councils.
* That the Minister of Science and Technology, through her Department and within six months of this report being adopted by the National Assembly, provide the Committee with a detailed report on the effects of inadequate resourcing on the Department’s programmes and entities.

As per the provisions of the Money Bills Amendment Procedure and Related Matters Act, the Committee’s 2015 BRR Report was adopted by the National Assembly on 17 November 2015 and then forwarded to the Ministers of Finance and Science and Technology for a response.

The Minister of Finance, in his response to Parliament, stated in relation to the recommendations for additional funding:

“Due to the constrained fiscal outlook, the scope to provide additional funding has been limited. Should the fiscal outlook improve, recommendations for additional funding may be considered in future budget processes.”

“To ensure greater economic and social returns from intellectual property, additional funding of R75 million has been allocated to NIPMO over the medium term.”

The Minister of Finance also stated that the medium term allocation of R7.5 billion to the NRF will result in 300 more masters (5 300 currently) and 100 more doctoral (3 200 currently) students being supported by 2018/19.

The Department in its various briefings to the Committee have stated that progress is being made with the reviews of the 1996 S&T White Paper and the Strategic Management Model for S&T. The process to co-ordinate public funding for the science councils is also receiving attention and a RDI Technical Input Group, convened by National Treasury and the Department, has been established to deal with the 2016 Medium Term Expenditure Framework (MTEF) guidelines. Furthermore, the 2016 Annual Performance Plan of the Department also stated where performance targets had to be reduced due to budget and/or capacity constraints.

1. **Overview and assessment of financial performance**
   1. **Overview of Vote expenditure (2012/13 to 2016/17)**

**Table 1:** **Overview of the Department’s 2012/13 to 2015/16 expenditure and 2016/17 allocation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Programme**  **R million** | **2012/13** | **2013/14** | **2014/15** | **2015/16** | | **2016/17** |
| **Audited**  **expenditure** | **Audited**  **expenditure** | **Audited**  **expenditure** | **Final appropriation** | **Audited**  **expenditure** | **Allocated** |
| 1. Administration | 225.3 | 257.5 | 278.4 | 309.8 | 301.9 | 304.0 |
| 2. Technology Innovation | 1 156.8 | 1 669.7 | 974.0 | 1 070.6 | 1 063.3 | 1 007.1 |
| 3. International Co-operation and Resources | 136.5 | 139.8 | 107.6 | 116.9 | 114.9 | 124.5 |
| 4. Research, Development and Support | 2 039.0 | 2 462.7 | 3 489.8 | 4 226.9 | 4 218.9 | 4 200.6 |
| 5. Socio-economic Innovation Partnerships | 1 415.7 | 1 639.8 | 1 539.2 | 1 741.8 | 1 738.3 | 1 792.9 |
| **Total** | **4 973.3** | **6 169.5** | **6 389.0** | **7 466.1** | **7 437.5** | **7 429.0** |
| **(% total expenditure)** | **99.5** | **99.5** | **98.6** | **99.6** | |

The Department was allocated R7.48 billion for the 2015/16 financial year, with medium-term growth in allocations projected to increase to R7.56 billion in 2016/17 and R7.6 billion in 2017/18. The 2015/16 budget allocation was to realise the priority focus areas of improving STI HCD; more effectively translating research outcomes into new products and services for the economy; ensuring consistent progress on the SKA project; and contributing to the development of STI HCD in Africa. The Department with its entities are responsible for ensuring the fulfilment of these priorities. Hence, 93% (R6.98 billion) of the Department’s budget was allocated to Transfers and subsidies. The allocation for Transfers and subsidies comprised R5.47 billion for the Department’s agencies and science councils, R1.25 billion for Public corporations and private enterprises, R149.6 million for Non-profit institutions and R114.6 million for Higher education institutions. Programmes 2: Technology Innovation (14.3%), 4: Research, Development and Support (56.6%), and 5: Socio-economic Innovation Partnerships (23.3%) received 94% of the Department’s total budget allocation and only Programmes 4 and 5 received above inflation increases.

The 2015/16 Adjusted Estimates of National Expenditure (AENE) saw the Department’s budgetary allocation reduced by approximately R16 million, from R7.48 billion to R7.46 billion. The Department declared R20 million in unspent funds, mainly due to cost containment measures regarding travel and subsistence. Furthermore, an additional R3.986 million was allocated to the Department to cover the higher than expected increase in staff remuneration.

The unspent funds declared comprised the following:

* Programme 1: Administration - R2.565 million;
* Programme 2: Technology Innovation - R475 000;
* Programme 3: International Cooperation and Resources - R816 000;
* Programme 4: Research, Development and Support - R893 000 and R7.5 million from the NRF; and
* Programme 5: Socio-economic Innovation Partnerships - R251 000 and R7.5 million from the CSIR.

The Department spent R7.44 billion (99.6%) of its total 2015/16 budget, resulting in a surplus of R28.6 million. The Department allocated R6.96 billion of the R6.97 billion for Transfers and subsidies. The Department effected virements amounting to R130 million (approximately 2% of adjusted budget) after the AENE process. R28.4 million was moved between major items and R71.4 million was moved between Programmes. Payments for capital assets received were R28.4 million, with the largest share released from Goods and services, and these funds were redirected to machinery and equipment for the procurement of information technology (IT) infrastructure. The virements under Transfers were redirected towards the Intellectual Property (IP) Fund, to capacitate Offices of Technology Transfer, and for the absorption of SunSpace (the satellite manufacturer) into SANSA.

The Department incurred R1.1 million (R1.9 million in 2014/15) in irregular expenditure due to non-compliance with supply chain management processes, the details of which are being investigated. Irregular expenditure from previous years amounts to R33.8 million; hence, R34.9 million in irregular expenditure is awaiting condonation. The Department incurred R62 000 in fruitless and wasteful expenditure due to travel agent charges and penalties for cancellation of travel bookings. These incidences are under investigation.

The Department and its entities did not incur any unauthorised expenditure.

* 1. **Overview of entity allocation**

The entities are funded through a Parliamentary grant (baseline allocations), specific project funds (ring-fenced) from the Department, and from income that is generated from research and commissioned projects, or royalties, publishing, membership and facility fees. In total, six entities were allocated, as their baseline funding (excludes contract funding from the Department), approximately R2.4 billion of the Department’s 2015/16 budget, with the NRF and CSIR receiving the bulk of this allocation. Programme 1 incorporates the funding requirements of NACI within its budget allocation, and SACNaSP does not receive any funding from the Department. It funds its activities from the annual registration and membership fees it receives.

All six entities require funds, additional to their baseline allocations, to meet their mandate and operating costs. In addition, the challenges experienced by entities as well as the additional responsibilities being assigned to them also indicate that current baseline allocations are insufficient and not increasing at the rate necessary to bring about the required rate of change within the NSI.

* 1. **Auditor-General’s report**

The Auditor-General (AG) audited the Department, CSIR, HSRC, and the NRF. Private auditors audited TIA, SACNaSP, SANSA and ASSAf. The CSIR, HSRC, NRF, SACNaSP, SANSA and TIA, once again, all received clean audit opinions.

The AG awarded the Department an unqualified audit opinion with findings (clean audit in 2014/15). The findings pertain to the Department not complying with legislative prescripts to pay service providers within the required periods. The AG found that this finding could have been avoided had the Department’s management properly implemented the controls surrounding the payment of invoices.

The AG awarded ASSAf an unqualified audit opinion with findings relating to inadequate compliance with legislation and; hence, inadequate exercise of oversight responsibility by ASSAf’s management.

1. **Overview of service delivery performance**
   1. **Service delivery performance for 2015/16**

The Department’s budget funds five Programmes. These Programmes, with their concomitant achievement against the performance targets for the 2014/15 and 2015/16 financial years are shown in Table 2. Previous years overall performance is shown at the bottom of Table 2.

**Table 2: Programme performance for the 2014/15 and 2015/16 financial years**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Programme** | **Targets** | | **Achieved** | | **Partially achieved** | | **Not achieved** | |
| **2014/15** | **2015/16** | **2014/15** | **2015/16** | **2014/15** | **2015/16** | **2014/15** | **2015/16** |
| Programme 1 – Administration (of the Department) | 17 | 19 | 15 | 18 | 2 | ----- | ----- | 1 |
| Programme 2 – Technology Innovation | 14 | 9 | 9 | 7 | 2 | 2 | 3 | ----- |
| Programme 3 – International Cooperation and Resources | 10 | 10 | 10 | 10 | ----- | ----- | ----- | ----- |
| Programme 4 – Research Development and Support | 13 | 15 | 11 | 10 | 1 | 3 | 1 | 2 |
| Programme 5 – Socio-economic Innovation Partnerships | 11 | 11 | 10 | 9 | 1 | ------ | ----- | 2 |
| **2014/15 vs 2015/16 performance** | **65** | **64** | **55**  **(85%)** | **54**  **(84%)** | **6**  **(9%)** | **5**  **(8%)** | **4**  **(6%)** | **5**  **(8%)** |
| **2013/14 performance** | **57** | | **44 (77%)** | | **9 (16%)** | | **4 (7%)** | |
| **2012/13 performance** | **71%** | | | | | | | |
| **2011/12 performance** | **67%** | | | | | | | |

Overall, the Department has shown consistent improvement in the achievement of its performance targets since the 2011/12 financial year, however, dipping by 1% from the 2014/15 financial year’s achievement and achieving an overall performance of 84% in 2015/16. Programme 3, receiving the smallest budget allocation, has once again achieved all its performance targets.

Performance against the Department’s strategic goals includes:

**Goal 1:** Responsive, co-ordinated and efficient NSI – build on previous gains to create a responsive, co-ordinated and efficient NSI.

* NACI completed the first draft of the review of the 1996 Science and Technology White Paper, and the Department reported that a draft Green Paper might be available by end-2016.
* Establishing a joint government-industry task team to evaluate and propose recommendations to improve the design and administration of the R&D Tax Incentive. The task team provided the Minister of Science and Technology (the Minister) with three high-level recommendations regarding (1) addressing the backlog of applications, (2) legislative amendments, and (3) the administration of the R&D Tax Incentive. The Minister will consult with stakeholders regarding the recommendations and the actions that need to be taken to improve the R&D Tax Incentive. The Department reported that it aims to achieve the 90-day turnaround application processing time and hopes to clear the 2013/14 and 2014/15 application backlog by end of 2016.
* The Minister appointed a panel to review the STI institutional landscape.
* Convening, with National Treasury, the RDI Technical Input Group to deal with the 2016 MTEF guidelines. One of its first tasks was to establish an integrated view of the funding pressures of the public RDI system.
* Finalising and implementing the Framework for Science and Technology (S&T) co-operation with other government departments. This Framework will guide the prioritisation of the Department’s S&T co-operation with other departments.

**Goal 2:** Increased knowledge generation – maintain and increase the relative contribution of South African researchers to global scientific output.

* Awarding 79 research infrastructure grants compared to 69 grants awarded last year.
* Progressing with the formulation of the South African Research Infrastructure Roadmap (SARIR), which will strategically direct national research infrastructure expenditure. Funds have been identified and approval will be sought to begin with four of the 13 selected research infrastructures in 2016/17.
* Publishing 7 158 ISI-accredited research articles, compared to 6 470 articles last year.
* The Minister awarded 42 women-only research chairs under the South African Research Chairs Initiative (SARChI) bringing the total to 194 research chairs. SARChI is a R404 million-a-year government funded programme.
* The Centre of Excellence (CoE) in Palaeosciences discovered a new hominid species called *Homo naledi* at the Cradle of Humankind.
* Launching the 8th Indigenous Knowledge Documentation Centre (IKDC) at the Barolong Cultural Village in Thaba Nchu. The IKDC is hosted in partnership with the University of Free State’s Centre for African Studies.

**Goal 3:** Human capital development – increase the number of high-level graduates and improve their representivity.

* Supporting 13 307 postgraduate students, compared to 11 335 students last year.
* Supporting 4 315 researchers with grants, compared to 4 064 researchers last year.
* Placing 1 044 graduates and students in science, engineering, technology and innovation (SETI) institutions. Current data show that approximately 60% of these students are employed within 3 months of being placed in the various institutions, while approximately 20% continue with their studies[[1]](#footnote-1).
* The Department modelled the financial implications of the NDP targets for its HCD and Research Infrastructure programmes. The Department’s model will be incorporated into the National HCD Strategy for Research Innovation and Scholarships.

**Goal 4:** Using knowledge for economic development – derive a greater share of economic growth from R&D-based opportunities and partnerships.

* The Department opened the Biomanufacturing Industry Development Centre (BIDC) at the CSIR, a first in South Africa. The BIDC incubates small and medium enterprises (SMEs) by developing bio-based manufacturing processes and products, enabling the SMEs to, relatively quickly, meet customer needs and exploit potential market opportunities. The SMEs the BIDC supports retain sole ownership of their innovations and total control of their value chain and partnerships. The economic impact of the BIDC is projected to reach approximately R250 million over the next five years. To date, it is supporting 19 SMEs and has developed 33 products in the cosmetics, nutrition and biotechnology industries. The BIDC has facilitated the creation of 105 permanent jobs, 165 temporary jobs and trained more than 50 interns.
* Developing the Bio-energy Atlas for South Africa, which is a web-based decision-making support tool for policy makers and investors in the energy sector. This tool provides a scientific understanding of the potential of bio-energy resources to be converted into transport fuels. It supports the implementation of the Biofuels Industrial Strategy.
* Finalising a report that details South Africa’s scientific and technical readiness to support hydraulic fracturing of shale gas reserves.
* Unveiling the first prototype hydrogen fuel cell forklift and refuelling station at Impala Refining Services. The prototype was a collaborative effort between Hydrogen South Africa’s (HySA) systems integration and technology validation centre of competence and Impala Platinum’s Impala Refining Services, the latter providing R6 million over the last three years to develop the prototype. Impala Platinum plans to replace approximately 35 diesel/electric forklifts with the hydrogen fuel cell forklift.
* Launching the South African Marine Research and Exploration Forum (SAMREF) that will exploit research opportunities in offshore oil and gas exploration, one of the focus areas of Operation Phakisa (Oceans Economy).

**Goal 5:** Knowledge utilisation for inclusive development – accelerate inclusive development through scientific knowledge, evidence and appropriate technology.

* Ten indigenous knowledge-based community development projects were assessed for commercial viability.
* Completing a feasibility study for the establishment of an extraction plant facility in Mamelodi and completing a Moringa pilot plant in Limpopo.
* Supporting the development of a mobile application on Primary Health Care Standard Treatment Guidelines and Essential Medicines List for use in primary health care establishments.
* Developing the Sanitation Technology Evaluation and Assessment Database and Tool.

Increasing opportunities for South African researchers and institutions to access international resources and support is an important factor that cuts across the five strategic goals of the Department. Hence, during 2015/16, key achievements include:

* Jointly supporting with its African partner governments, 61 research and innovation projects.
* Supporting 13 African Union and Southern African Development Community STI initiatives.
* Enabling a R2 billion rand investment in support of collaboration with South Africa by the Department’s international partners.
* Enabling 169 South African students to participate in international training programmes as part of the Global Knowledge Partnership.
* Securing a R619 million international investment in the NSI.
* Securing five tactical leadership positions for South Africa in global science decision and policy-making structures, and influencing six multilateral outcomes.
* Hosting the first Science Forum South Africa, an international public science event that was attended by more than 1 500 participants from more than 50 countries.

Programmes 2 and 4 are responsible for the five performance targets that were partially achieved. Programmes 1, 4 and 5 are responsible for the five performance targets that were not achieved. Table 3 lists these targets as well as the reasons for deviating from the planned performance.

**Table 3: 2015/16 Performance targets that were partially and not achieved**

|  |  |  |  |
| --- | --- | --- | --- |
| **Programme** | **Planned target** | **Actual performance** | **Reason for deviation** |
| Programme 1 – Administration (of the Department)   * 1 target not achieved | Department public entities’ 2016/17 strategic and annual performance plans approved by the Minister and shareholder compacts signed by the Minister and chairpersons of the boards by 31 March 2016 | The Minister approved all strategic and annual performance plans.  Not all shareholder compacts were signed by the Minister | In terms of the PFMA, the CSIR is the only entity that is required to sign a shareholder compact, as it is a 3B entity. The signing of shareholder compacts falls outside the reporting period of the Department in terms of the financial year |
| Programme 2 – Technology Innovation   * 2 targets partially achieved | Seven innovation enabling programmes implemented by 31 March 2016 | Six innovation enabling programmes implemented by 31 March 2016 | There was an administrative delay with the payment to one Office of Technology Transfer (OTT) |
| Four technology development and innovation policy directives developed and adopted by government by 31 March 2016 | Three technology development and innovation policy directives developed and adopted by government by 31 March 2016 | There were significant delays in the finalisation of terms of reference and in the procurement processes for the appointment of a service provider to conduct the landscaping exercise, which was to serve as input into the development of the Nanotechnology Innovation Roadmap |
| Programme 4 – Research Development and Support   * 3 targets partially achieved | 14 880 postgraduate students (5 311 BTech and honours, 5 685 master’s, and 3 136 PhD students) and 748 postdoctoral fellows awarded bursaries through National Research Foundation (NRF) and Department-managed programmes as reflected in the NRF and Department project reports by 31 March 2016 | 13 307 postgraduate students (4 225 BTech and honours, 5 120 master’s, and 3 404 PhD students) and 796 postdoctoral fellows awarded bursaries through NRF and Department-managed programmes as reflected in the NRF and Department project reports by 31 March 2016 | Deviation of 1 573.  The following factors appear to have contributed to the deviation:   * The instability at higher education institutions brought about by the “Fees Must Fall” campaign in the last quarter of 2015/16 resulted in the closure of many campuses. The administrative processes for the successful uptake of awards were therefore not completed as they had been in the earlier quarters. * In addition, the disruption of examinations in 2015 and early 2016 will have negatively affected the number of BTech, honours and master’s students registering at the start of the 2016 academic year, thus also unexpectedly decreasing the number of bursaries taken up in the last quarter of 2015/16 |
| 4 539 researchers awarded research grants through NRF-managed programmes as reflected in the NRF project reports by 31 March 2016 | 4 315 researchers were awarded research grants through NRF-managed programmes by 31 March 2016 | Deviation of 224.  It is very difficult for the Department to predict or manage the target closer than a variance of about 5%, as the target depends on the pool of applicants and the quality of the proposals submitted for funding |
| 28 MeerKAT antennas installed | 20 antennas installed by  31 March 2016, with 21 pedestals having  been erected | Deviation of 8.  The effect of the strike in the steel industry at the end of 2014 negatively affected dish production in early 2015/16. The process of installation was also halted while dish production methods were adapted to ensure the dishes were produced in line with the adapted specifications |
| Programme 4 – Research Development and Support   * 2 targets not achieved | Regulations on the protection of IK approved by the Minister for widespread public consultation by 31 March 2016 | Integration of public comments into the Bill finalised. The Bill was approved by Cabinet by 31 March 2016 | Two factors contributed to this target not being achieved. First, submission of the Bill to Cabinet was delayed by the unexpected introduction of the new  Social Economic Impact  Assessment requirement, which needed to be finalised before submission to Cabinet. Secondly, once this step had been completed, consideration of the Bill by Cabinet was postponed on two occasions. |
| One plan for compiling the first biennial report on the state of climate change in South Africa for Cabinet approval by 31 March 2016 | A plan for the development of the biennial report was approved by the Deputy Director- General: Research Development and Support | This target was ambiguously formulated. The intention was to complete the plan (for compiling a report for Cabinet approval) by 31 March 2016, and this was achieved. However, the target could also be read as stating that the plan itself was subject to Cabinet approval by 31 March 2016 |
| Programme 5 – Socio Economic Innovation Partnerships   * 2 targets not achieved | Five reports and policy briefings on the innovation system and innovation policy approved by EXCO/published by 31 March 2016. The reports and policy briefing are as follows:   * 2014/15 report on publicly funded research, science and innovation produced and disseminated * 2013/14 national survey on research and experimental development (R&D survey) produced by 31 March 2016 * 2014/15 report on Performance of R&D Tax Incentive produced by 31 March 2016 * Report on Survey of Intellectual Property and Technology Transfer of Publicly Funded Research produced by 31 March 2016 * Report on a new approach to innovation measurement produced by 31 March 2016 | Two reports/policy briefings approved by EXCO/published by 31 March 2016.   * 2014/15 Report on Government- Funded Scientific and Technological Activities * 2013/14 National Survey on Research and Experimental Development released/ published; cabinet memorandum tabled to brief Cabinet about the results | The Report on the Survey of Intellectual Property and Technology Transfer of Publicly Funded Research was delayed in the early stages of production, as three institutions with big intellectual property and technology transfer portfolios required more time to organise their data to respond to this new survey. Project timelines also had to be extended for additional validation and iterations of draft reports, and for the sourcing of international benchmarking data.  The report on a new approach to innovation measurement was delayed because time was needed to clarify the scope and focus of the project. This included consultations within the Department, and also with the Centre for Science, Technology and Innovation Indicators, the National Advisory Council for Innovation (NACI) and an international expert on innovation measurement, as well as learning from the Eurostat-Organisation for Economic Cooperation and Development (OECD) scoping workshop for the Oslo Manual revisions |
| Preapproval decisions provided within 90 days of date of receipt of application for the R&D tax incentive by 31 March 2016 | By 31 March 2016, 255 applications were still to be finalised. Of these, 16 were received before January 2014; 90 were received in 2014; 108 were received in 2015; and 41 were received in 2016 | Progress has been made but is still slow owing to lack of capacity, with particular bottlenecks at the finalisation of evaluation reports for adjudication and the processing of recommendations for final decision by the Minister |

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

ASSAf promotes outstanding achievement in all fields of scientific enquiry, recognises excellence, and provides evidence-based scientific advice to government and other stakeholders.

2016 represents the 20th year of ASSAf’s existence. The work of ASSAf is structured into six programmes; namely, Governance and Administration, Communications, Liaison, Policy Advisory, Publications, and Scholarly Publishing. Its evidence-based studies and science advice are informed by key national challenges. It hosts SciELO SA, the only open access platform for scholarly publishing in South Africa and on the continent, thereby increasing the visibility of South African scholarly journals. It also hosts two regional offices of key international science partners, as well as the South African Young Academy of Science (SAYAS) and the South African Academy of Engineering (SAAE). ASSAf provides secretarial support and funding to SAYAS, and provides office space and support services to SAAE at no cost.

ASSAf currently has a membership of 470 (441 in 2014/15) top scholars. ASSAf’s full membership currently comprises 25% women and 28% black top scholars, achieving its 2015/16 performance targets related to diversifying its membership. The ASSAf 2015/16 Annual Report states that despite concerted efforts to increase the nomination of black and female scholars, the election process did not change the gender and race profile of ASSAf’s membership. Possible solutions to this are under investigation and may include amending the ASSAf Act.

Governance and Administration achieved 80% (8 of 10) of its performance targets, Communications achieved 100% (5 of 5) of its performance targets, Liaison achieved 100% (5 of 5) of its performance targets, Policy Advisory achieved 67% (4 of 6) of its performance targets, Publications achieved 100% (2 of 2) of its performance targets, and Scholarly Publishing achieved 83% (5 of 6) of its performance targets. ASSAf’s average performance achievement for the 2015/16 financial year is 88%.

The Department’s baseline allocation to ASSAf was R22.9 million (down from R24.6 million in 2014/15) and its contract funding allocation was R594 463 (down from R3 million in 2014/15). Additional revenue totalled R1.9 million from government, R4.8 million from local grants and donations, and R4.6 million from foreign grants and donations. Total revenue for 2015/16 was R36.3 million and ASSAf’s total expenditure amounted to R42.5 million, resulting in a deficit of R6.3 million.

ASSAf’s total revenue decreased by R3.5 million from the 2014/15 financial year and its total 2015/16 expenses increased by R6.6 million. The key contributing factors to the decreased revenue was a R6.6 million decrease in government grants and subsidies, a R80 708 decrease in publication fees, and no revenue from workshop fees (which amounted to R740 071 in 2014/15). The increased 2015/16 expenditure is attributed to, among other factors, a R3 million increase in employee costs and a R3 million increase in general expenses.

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

The CSIR’s mandate is to foster industrial and scientific development in the national interest through multidisciplinary research and technological innovation.

The CSIR’s R&D activities are organised around the concept of a Research Impact Area (RIA). There are six RIAs: Health, Defence and Security, Built Environment, Natural Environment, Industry, and Energy. These are supported by a set of core technologies and the impact of this R&D work is further refined by three cross-cutting Flagship Programmes (Health, Safety and Security, and Transnet Capability Development) that focus on short-term interventions that transfers technological solutions to external stakeholders.

Annually, the CSIR enters into a Shareholder’s Compact with the Department, which lists the specific Key Performance Indicators (KPIs) against which its performance will be measured. The CSIR’s KPIs comprise three categories, namely, Scientific and technical, Learning and growth, and Finance and governance. The CSIR has achieved or exceeded all except one of its performance targets. The target that was not achieved was earning Royalty and licence income equalling or exceeding R7.4 million. Here, the CSIR earned R5.2 million in Royalty and licence income, attributed largely to the slow growth rate of the economy and the current drought in South Africa.

The CSIR is funded through a combination of baseline and ring-fenced grants from the Department and earned contract R&D income from the public and private sectors, locally and internationally. Grant funding is invested in research programmes, research infrastructure, as well as in R&D skills development. The total operating income of the CSIR increased by 13% to R2.70 billion (R2.38 billion in 2014/15). The Parliamentary grant, recognised as income in 2015/16, amounted to R680.5 million, an increase of 0.8% from the prior year amount of R675.3 million. The CSIR’s total contract R&D income increased by 17% to R1.97 billion (R1.68 billion in 2014/15). This includes a R68.1 million (R93.9 million in 2014/15) ring-fenced allocation from the Department. The CSIR’s continued alignment with national strategic priorities ensured that a significant part of the contract income was received from the South African public sector. Public sector income amounted to R1.65 billion (R1.33 billion in 2014/15). The continued investment in scientific infrastructure and equipment remains a priority to ensure that world-class facilities and equipment are acquired and maintained. Over the past five financial years, R967 million has been invested in property, plant and equipment with R308 million invested in the 2015/16 financial year. The CSIR’s net profit amounted to R59.2 million (R52.4 million in 2014/15) and its cash and cash equivalent holdings were R1 billion (R975.9 million in 2014/15). Staff remuneration accounted for 54.8% of the CSIR’s total operating expenditure.

* + 1. **Human Sciences Research Council (HSRC)**

The HSRC aims to be a research organisation that advances social sciences and humanities to help address pressing social issues such as inequality and poverty, and enhances human welfare and development. Over the next five years, the HSRC’s research programmes and centres will specifically focus on poverty and inequality. These programmes and centres are:

* + Africa Institute of South Africa (AISA)
  + BRICS Research Centre (BRC)
  + Centre for Science, Technology, Innovations Indicators (CeSTII)
  + Democracy, Governance and Service Delivery (DGSD)
  + Economic Performance and Development (EPD)
  + Education and Skills Development (ESD)
  + HIV/AIDS, STIs, and TB (HAST)
  + Human and Social Development (HSD)
  + Population Health, Health Systems and Innovation (PHHSI)

A cross-cutting entity, Research use and Impact Assessment (RIA), seeks to extend and enhance the use and effect of scientific research from the HSRC. The research outputs include reports, occasional papers and scholarly articles in peer-reviewed journals, books, and a news magazine that seeks to improve the public understanding of science. These outputs are disseminated in print through the HSRC Press, policy briefs aimed at government and policymakers, and the media, including social media, the HSRC’s website, conferences, and research networks.

The performance measurements and quantifiable performance targets for the reporting period are in five areas, summarised by the acronym ADEPTS:

* + Knowledge **A**dvancement through peer reviewed publications, policy briefs, collaboration and public communications – achieved 6 of 9 performance targets, 67%.
  + Contributing to **D**evelopment and social progress in Africa – achieved 3 of 4 performance targets, 75%.
  + Creating and **E**nhancing a skilled and capable workforce – achieved 6 of 10 performance targets, 60%.
  + **P**reserving and archiving research data as a resource for future use by researchers and other users – achieved all 3 performance targets, 100%.
  + Contributing to ongoing institutional **T**ransformation – achieved 4 of 6 performance targets, 67%.
  + Developing and implementing strategies for financial **S**ustainability – achieved 10 of 12 performance targets, 83%.

The overall performance of the HSRC for the 2015/16 financial year was 73% (32 out of 44 targets achieved), compared to 71% for the 2014/15 financial year. Other than the work conducted by the programmes and centres, key achievements for 2015/16 include:

* + AISA hosting the 10th Africa Young Graduates and Scholars conference at the University of Limpopo.
  + The BRC developed a new data warehouse for the BRICS (Brazil, Russia, India, China and South Africa) initiative, bringing together critical comparative data for the partner countries.
* DGSD finished a comparative study on social cohesion between South Africa and Brazil.
  + EPD played a central role in compiling the Sixth and Final Millennium Development Goals Report for South Africa.
* ESD continued its work on the transitions of young people to the workplace.
  + HAST conducted a major study in 25 districts on the programmatic mapping and size estimation of key populations that are at risk of HIV infection.
* PHHSI continued its work on healthy and safe nutrition.
* Hosting the Gender Summit in April 2015
* Hosting the World Social Science Forum in September 2015.

The targets that were not achieved pertain to:

* + Advancement – not achieving the number of scholarly books and book chapters published, and the number of policy briefs produced.
* Development – not achieving the number of African research fellows at the HSRC.
  + Enhancing – not achieving the number of post-doctoral fellows appointed at the HSRC, the number of journal articles per master’s intern, having no PhD interns complete their programmes, and the number of journal articles per PhD intern.
* Transformation – not achieving the gender and race targets for senior researchers.
  + Sustainability – not achieving the percentage of total income that is extra-parliamentary, and the numbers of officials attending the anti-corruption campaign.

The inability to attract senior African research fellows and reach the external funding target remains an ongoing challenge for the HSRC.

In 2015/16, the HSRC received revenue from Parliament (R270.6 million, 57.7%), research (R159.5 million, 34%) and other sources (R38.8 million, 8.3%), totalling R469 million. The Parliamentary grant included an allocation of R17.3 million for the purchase of 24 mobile clinics. The HSRC aimed to secure 48% of its revenue from external sources, but its actual achievement amounted to 42%. The total expenditure was R436.8 million, which included R237 million (54.2%) for staff costs and R114.6 million (26.2%) for research costs. The HSRC recorded a surplus of R32.2 million, resulting from the allocation for the mobile clinics, funds allocated to AISA for capacity building, vacancies from AISA and the HSRC (departure of Chief Executive Officer (CEO) and some executives), and projects that were still in progress at the end of the financial year.

The HSRC continued to diversify its funding streams and increased the funding it gets from the public sector. However, the HSRC needs more public funding. Although, the HSRC is proficient and successful at raising funds from the private sector and from donors, there are difficulties that working with a multiplicity of external agencies produces. These include not having complete control over the research agenda, and having to modify and adjust accountability capacity to the different financial regulations and systems required by international partners and collaborators, while, simultaneously, remaining compliant with the Public Finance Management Act (PFMA). To streamline its operations and research priorities, the HSRC has increasingly attempted to secure multiyear contracts with funding agencies. For 2015/16, 42 of the 65 (64%) grants received are multiyear grants.

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

NACI is mandated to advise the Minister of Science and Technology, and through the Minister, Cabinet, on the role and contribution of science, mathematics, innovation and technology, including indigenous technologies, in promoting and achieving national objectives. During 2015/16, NACI’s advice focused on the following:

* The co-ordination and stimulation of the NSI.
* The co-ordination of science and technology policy and strategies with those of other sectors.
* The establishment and maintenance of information systems to support STI policy.
* The investigation of developments in the field of STI that may require new legislation.

NACI achieved all its performance targets for the 2015/16 financial year; establishing a system to provide rapid responses to requests for advice; producing 11 advisory opinions for the Minister, hosting eight roundtable/stakeholder engagements, producing seven research reports on topical matters related to the NSI; and collaborated on 17 initiatives with local and international institutions. The work conducted included:

* Requests from the Minister to review the current Science and Technology White Paper, develop a framework for the next decadal STI plan, develop a national STI information portal, and analyse the declining business expenditure on R&D.
  + Rapid advice on energy, water and sanitation, and food security in South Africa.
  + Analysing the R&D survey data.

NACI also developed a 5-Year Strategic Plan (2016-2021), which will guide its work and improve its operations. NACI conducted a skills audit in its Secretariat, which currently comprises 13 staff. It is hoped that an expanded staff complement will allow NACI to improve on fulfilling its mandate.

NACI is funded and administered by the Department’s Programme 1 (Administration), hence its financials forms part of the Department’s annual audit. NACI was allocated R14.5 million, it spent R12.1 million, with R8.1 million covering the compensation of employees and R4 million spent on goods and services.

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

The NRF promotes and supports research in all fields of science, and provides research funding and platforms through national facilities and science engagement activities. Its key goal is to ensure that South Africa contributes at least one percent to global R&D output by 2020 and that this knowledge output benefits society.

The Research and Innovation Support and Advancement unit (RISA) spent R2.6 billion in support of students, researchers and research across the NSI. R1.8 billion was invested in HCD, of which 67% (R815 million) was invested in honours, master’s and doctoral student support. In 2015/16, 69% (8 980) of the postgraduate students supported were black and 54% (7 032) were female. A total of 4 853 master’s and 3 181 PhD students were supported. Strategic investments, including the South African Research Chairs Initiative (SARChI) and the Centres of Excellence (CoEs) amounted to 33% (R584 million) of the investment in HCD. The CoEs supported an additional 1 759 postgraduate students, of which 63% were black and 53% were female. The NRF awarded 42 women-only new research chairs. In addition, there was an increase in the number of black and female rated researchers of 13% (98) and 6% (62), respectively for the year under review. RISA spent R2.3 billion in grant funding to institutions and administered 13 401 applications through the peer-review process. The NRF invested R251 million in awarding research infrastructure grants to the universities through the National Equipment Programme (NEP) and the National Nanotechnology Equipment Programme (NNEP). The NRF contributed to the provision of infrastructure platforms by investing a further R812 million in the National Research Facilities, including the SKA project. The National Research Facilities produced 414 ISI-accredited publications and maintained an annual cumulative citation impact of 1.3. The National Research Facilities, including the SKA project, supervised 569 postgraduate students. The number of international co-publications was 8 838 against a target of 7 400. In pursuit of the goal of a “Scientifically literate and engaged society”, the NRF invested R179 million in institutions and organisations advancing science engagement activities. Through various initiatives across the country, the NRF trained 19 410 educators and engaged with 370 624 learners. Approximately 1 million members of the public participated in various science engagement activities over the reporting period.

Concerning activities to be discontinued, discussions are being held between the Ministries of Science and Technology and Environmental Affairs for the possible transfer of the National Zoological Gardens of South Africa (NZG) from the NRF to the South African National Biodiversity Institute (SANBI) during the 2016/17 financial year.

The NRF’s 2015/16 total income of R4.16 billion (R3.1 billion in 2014/15) comprised the Parliamentary grant of R878.4 million (21% of total), ring-fenced funding from the Department of R1.7 billion (42% of total), designated income of R1.3 billion (31% of total), and other income of R242.5 million (6% of total). The increase in income from 2014/15 to 2015/16 was mainly attributed to a 114% increase in the ring-fenced funding received for HCD (R357 million) and the SKA project (R339 million) from the Department. Designated income decreased by 3.5% due to a number of Department contracts that were transferred to the ring-fenced allocation. The Parliamentary grant increased by a nominal 3%. The decline of the Parliamentary grant in real terms (inflation adjusted), the increased inflationary costs of operations, and currency volatility remains a matter of concern, hence, the NRF’s management and Board are exploring a suitable resource allocation framework with the Department to support the long-term sustainability of the NRF. The bulk of the NRF’s expenditure (62%) was to allocate grants and bursaries, while employees’ remuneration and programme expenditure accounted for 14% and 16% of total expenditure, respectively.

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

SANSA aims to promote the peaceful use of space, foster international co-operation in space related activities, foster research in space science, advance scientific engineering through HCD, and facilitate the creation of an environment that is conducive to industrial development in space technologies.

SANSA comprises the following programmes/directorates; namely, Corporate support, Space operations, Space science, Space engineering and Earth Observation. These units achieved 17 of SANSA’s 19 performance targets (89%) for the 2015/16 financial year. The targets that were not met are:

* + Reach 25% development status of EO-Sat1 (South Africa’s next earth observation satellite). The target was not met due to work restrictions emanating from the ongoing uncertainty regarding satellite funding.
  + Secure R4.2 million in revenue from global partnerships for the space programme. SANSA secured R1 million and future targets will be reviewed based on realistic baseline data.

SANSA realised a total income of R338.6 million, spending R225.3 million, resulting in a surplus of R113.3 million. The total income includes the R124.3 million Parliamentary grant, R108 million from transfers and subsidies, R8.4 million interest income, R96.8 million for services rendered and R939 808 from other income. SANSA’s largest expenditure costs were R96 million for employee (highly specialised, scarce, skills) remuneration, R47 million for general expenses, R31 million for data licence fees, and R25 million for depreciation and amortisation of its assets.

* + 1. **South African Council for Natural Scientific Professionals (SACNaSP)**

The Natural Scientific Professions Act, No. 27 of 2003, provides for the establishment of SACNaSP and legislates the registration of professional natural scientists and technologists, and scientists- and technologists-in-training. SACNaSP is self-sustaining, generating revenue from the registration fees it administers.

SACNaSP has for the first time, secured funding (R12.6 million) from the Department for the period 2016 to 2018. These funds will be used to:

* + Improve SACNaSP’s Information Technology infrastructure.
  + Increase stakeholder engagement and improve visibility.
  + Roll out Continuing Professional Development (CPD) and implement a structured Candidate Mentoring Phase for young scientists.

During 2015/16, SACNaSP registered an additional 1 973 natural scientists, bringing the total registered scientists to 8 900. SACNaSP also registered 608 extension scientists and assisted 123 (110 approved) science professionals with obtaining a critical skills visa.

SACNASP faced significant challenges in the 2015/16 financial year with an 11% decrease in revenue as compared to the previous year. This was due to a lower than expected number of Extension Science applications. Annual fees form 63% of SACNaSP’s total revenue and the biggest challenge has been the collection of these fees from registered scientists. Hence, SACNaSP raised provision for bad debts on all registered scientists who have not paid their annual fees for more than two years. This has put a strain on its financial position, as its expenses are fixed and contractual. Other cost drivers included, honoraria fees for the new Council, the relocation of its office and the purchase of new furniture, updating the financial system, the recruitment process for the new Executive Director, and increased conference attendance. In accordance with the Act, Management will remove from the SACNASP database in the next financial year, all registered scientists that have not paid their annual fees in the last two years. SACNaSP’s total revenue was R9.2 million and its total expenditure was R11.9 million, resulting in a deficit of R2.7 million. SACNaSP has also appointed key personnel in permanent positions so that it does not have to outsource some of its administrative functions. This will allow SACNaSP to stay within its 2016/17 income and not incur a deficit.

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

TIA aims to support, stimulate and intensify technological innovation to improve economic growth. TIA is positioned as a development finance institution that provides “gap” funding for technology development projects (seen as high-risk investments, hence, there is a lack of commercial funding) with high social and economic impact. TIA’s goals are to; support commercialisation of technological innovations; increase access to infrastructure for technology development; and stimulate an agile and productive NSI.

TIA has resolved a number of the challenges that have plagued its administrative and project funding functions. It has concluded the redesign of the organisation’s strategy and structure and has reported an improved level of satisfaction from its clients. In 2015/16, TIA attracted third-party funding of R97.9 million, raised external income of R153.8 million, commercialised 9 technologies/products, assisted 2 197 small and medium enterprises (SMEs), developed 76 knowledge products, disbursed seed funds to 275 projects, and disbursed funds of R379 million. TIA achieved 13 of its 14 (93%) performance targets. The only target that was not achieved was to maintain staff turnover below 5%. The actual result was a staff turnover of 13.4%, resulting from 24 resignations and TIA only filling 11 posts.

TIA’s total 2015/16 revenue was R463 million, that included a Parliamentary grant of R385.2 million, contract income of R44 million, and other income of R35 million. TIA’s total expenditure was R523.4 million, resulting in a R53.7 million deficit. Total expenditure included R334 million for projects and R92.6 million for employee costs. TIA’s employee costs account for only 16% of its total expenditure, and its project costs account for 74% of total expenditure. TIA experienced a real decrease in income from the 2014/15 financial year but managed to maintain the level of project funding by decreasing its employee and administrative costs.

1. **Finance and Service delivery performance assessment**

Year-on-year, the Department has consistently demonstrated that it can spend, to a significant degree, its budget allocation according to spending targets, and that it has taken the necessary steps to ensure that the same progress is made with achieving its performance targets. For the 2015/16 financial year, the Department spent 99.6% of its budget and achieved 84% of its performance targets. In 2014/15, the Department spent 98.6% of its budget and achieved 85% of its performance targets. In 2013/14, the Department spent 99.5% of its budget and achieved 77% of its performance targets. The Department and the entities have also made extensive efforts to ensure that operational costs fall within the allowed prescripts and that the bulk of the publicly allocated and externally sourced funds are used to fulfil core mandates.

The three priority domains of the Department remain R&D, human capital development, and the provision of STI infrastructure. However, given its resources, the rate of progress within these priority domains is not at the desired level. Furthermore, the biggest threats to the objectives of the Department is the poor mathematics and science performance by South African scholars, the low throughput rate to postgraduate study, and the inadequate level of investment and co-ordination in RDI by both the private and public sectors.

South Africa’s investment in R&D as a percentage of GDP has further decreased from 0.76% to 0.73% in 2015. South Africa’s R&D expenditure as a percentage of GDP is low compared to other services-dominated economies (for example, Japan 3.47% and Brazil 1.15%). In the 2013/14 financial year, government was the highest source of R&D funding (R11 billion), followed by the business sector (R10.6 billion). The largest proportion of government R&D funding (93%) goes to higher education and government. Only 4% and 6% of business R&D funding goes to government and higher education, respectively. Alternatively, the business sector accounts for the largest share of South Africa’s R&D expenditure (46%), followed by the higher education sector at 28%. In countries with high R&D intensity, most of the R&D expenditure is sourced from industry. The Organisation for Economic Cooperation and Development’s (OECD) 2015 STI Scoreboard shows that in 2013, total R&D spending in OECD countries grew to USD 1.1 trillion (almost 2.4% of GDP), continuing the recovery in R&D investment since the global economic crisis. This increase was driven by business R&D, whereas government performed and funded R&D was impacted by budget consolidation measures, remaining flat at 0.7% of GDP for the last three years. This retrenchment of public support for science may endanger the stability and sustainability of research systems in countries that do not have the flexibility to accommodate these changes.

It has been conclusively shown that during fiscal strain, economies that significantly increase their investment in STI are able to respond faster and more comprehensively to fiscal improvement than economies that decrease their spending, or allow it only to increase at the existing rate of growth. In terms of the economy, the Department is specifically focusing on those sectors that are the largest contributors to South Africa’s trade deficit. Using its resources and leveraging additional resources from its STI partners, it seeks to identify and address technological issues that could lead to a reduction in the payments for imported technology and expertise. Furthermore, the Department is looking to unlock increased R&D investment within local and provincial government budgets by better aligning/promoting/driving its technology and innovation solutions for local economic development. The Department, through various initiatives, is attempting to increase the level of funding from the business sector for R&D. Some of these initiatives, for example, the R&D Tax Incentive have not enjoyed large uptake due to the qualification criteria and problems with applying for the incentive as well as with the administration of the incentive. The Department is currently considering additional industry inputs as to how to improve this incentive. With additional resources and partnerships, this objective may be achieved faster, ensuring that South Africa gets closer to the NDP goal of 1.5% GERD by 2019.

Overall, the Department with its entities have shown that they can spend their allocated budget and achieve a significant percentage of their performance targets (Table 4), as well as ensuring that they closely adhere to legislative prescripts in managing the allocations received from the public purse. The shortcomings in operations and challenges to achieving their mandates have been acknowledged, and plans to address and improve on these are in progress.

**Table 4: Consolidated 2015/16 performance and expenditure information for the science and technology portfolio**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Science and Technology Portfolio** | **% Performance** | **% Total expenditure** | **Audit opinion** | **Irregular expenditure** | **Fruitless and wasteful expenditure** |
| DST | 84 | 99.6 | Unqualified, with findings | R1.1 million | R62 000 |
| ASSAf | 88 | R6.3 million deficit | Unqualified, with findings | Not quantified – due to new audit requirements | R136 601 |
| CSIR | 94 | R59.2 million net profit | Clean audit | zero | zero |
| HSRC | 73 | 93 | Clean audit | R3.9 million | R182 000 |
| NACI | 100 | 83.5 | Not audited separately | zero | zero |
| NRF | 52 | 99.5 | Clean audit | R7.6 million | zero |
| SANSA | 89 | 66.5 | Clean audit | zero | zero |
| TIA | 93 | R53.7 million deficit | Clean audit | R117 000 | zero |

The Committee is immensely pleased with the performance of the Department and its entities and is of the view that greater impact and an acceleration of the change needed by the economy can only be achieved with the allocation of additional resources. Particularly for human capital development, research, and innovation to increase the knowledge generation capacity of the system, the development of new industries and for the provision and maintenance of research infrastructure.

1. **COMMITTEE OBSERVATIONS**

The Committee recognizes the important role that science, technology and innovation has to play in the transformation of South Africa. The Committee commends the Department and its entities for their efforts in delivering on some of the key priority areas for social and economic development in line with the goals of the NDP.

The Committee is of the view that with the current capabilities, a review and possible expansion of the mandates of some of the entities, together with increased funding, would allow the Department to play a more pivotal role in addressing issues of poverty alleviation and service delivery.

To this end, the Committee restates a previous recommendation, whereby they will engage the Department on how resource limitations have an impact on the Department’s programmes and plans.

The Committee welcomes the formulation of a framework for co-operation with other government departments. Enhanced co-ordination and co-operation is necessary for the successful implementation of the research and technology solutions developed by the Department to address service delivery, planning and growth issues.

The Committee acknowledges the formation of the RDI Technical Input Group, established to evaluate the funding pressures of the public RDI system. The Committee reiterates its stance that a policy to establish a centralized research and development budget allocation will ensure efficient allocation and spending on science, technology and innovation across all government departments.

The Committee is of the view that Government should make better use of its public entities to advise and provide services, as opposed to outsourcing needed services to external consultants.

An update brief on the SKA and MeerKAT projects is necessary to understand the current challenges in relation to the hydraulic fracturing of shale gas and the development of windfarms in the Karoo, and the effect these may have on the projects.

The Committee welcomes the review of the R&D tax incentive programme and looks forward to be briefed by the Department on the findings and recommendations of the process.

The Committee noted that currently only 0.73 percent of GDP is spent on R&D. For the country to reach its economic goals, reaching the target of 1.5 percent of GDP spent on R&D will have to be accelerated.

To assess how many of the students funded by the NRF are absorbed into the science system after they have completed their studies, the Committee urges the Department to develop mechanisms to track successfully students that it funds.

The Committee raised the concern that women in executive management positions in science are still lacking and encouraged the Department to find ways and means of addressing this.

The Committee notes with concern that funding for the Economic Competitiveness Support Package will end in the 2017/18 financial year. Hence, the Committee supports the efforts of the Department to ensure that this funding continues beyond 2017/18 since it is important for the continuation and further successful implementation of programmes that have boosted industrial development, assisted entrepreneurs and accelerated job creation in South Africa.

The Committee notes the regression in the 2015/16 audit outcome of the Department, acknowledges the commitments made by the Minister to implement plans to address the shortcomings identified, and commits itself to requesting, from the Department, during its quarterly performance briefings sessions, an update on the progress with implementing the recommended action plans and the status of key controls.

The Committee notes the slight regression in the 2015/16 performance achievement of the Department and acknowledges the reasons for this. Hence, the Committee requests the Department to better formulate and articulate its performance indicators and targets, building in the necessary variation required by the prevailing environment, to mitigate against negative performance results that emanate from factors beyond the Department’s control or influence.

The Committee understands that science, technology and innovation create an enabling environment to address developmental challenges. Hence, the Committee notes and commends the research, development and innovation work of the Department and its entities. It further recognises that this work is of the highest international standard and is being used globally. The Committee is, however, interested to know and explore the extent to which this work is being used within South Africa to address national challenges.

The Committee notes the impact that the #FeesMustFall campaign has had on the performance of the National Research Foundation, and further notes that the performance for the 2016/17 financial year may be similarly impacted.

The Committee notes that the graduation rate and time to completion of degrees by postgraduate students funded by the National Research Foundation is well above the national average. This despite the bursary value not being commensurate with the actual cost of postgraduate study and the growth of the research grant not being in line with macro-economic factors.

The Committee notes that the entities all require funds additional to that which is allocated by the Department to fulfil their mandates and cover the operational costs. Furthermore, the Committee is cognizant that the need to source additional funds may require the entities to relinquish some control over the research agenda and introduce additional regulatory requirements to meet the needs of the funder.

1. **RECOMMENDATIONS**

The Portfolio Committee on Science and Technology recommends the following:

That it would support all additional funding requests made by the Department of Science and Technology to the National Treasury.

That the Department ensure full compliance with legislative prescripts to avoid future findings from the Auditor-General and that the issues regarding the audit status of ASSAf be addressed.

That the Department of Science and Technology and its entities show more clearly and disseminate more broadly the impact on national economic and social development, and service delivery that its investment in research, development and innovation has had to date.

That the National Research Foundation attempts to quantify the possible impact of the #FeesMustFall campaign on its future performance and financial requirements and that these findings are considered in its strategic planning.

That every effort be made to increase the level of funding to the National Research Foundation’s human capital development programmes so that greater impact can be achieved by making postgraduate study attractive, and increasing the training and graduation rates of science, engineering and technology postgraduates.

That the Department of Science and Technology interact with the Department of Energy to discuss the challenges and impacts that the hydraulic fracturing of shale gas and the development of windfarms may have on the SKA and MeerKAT projects. The Committee requests that the Department of Science and Technology report to it on these discussions within six months.

The Committee expressed its thanks and appreciation to the staff and officials supporting the Committee.

The Committee thanks the Minister, the Department and the entities for their co-operation and commitment.

**Report to be considered.**

1. Director-General, Dr P. Mjwara, presenting the 2015/16 fourth quarter performance report to the Committee on 24 August 2016. [↑](#footnote-ref-1)