



27 June 2014

**DEPARTMENT OF SCIENCE AND TECHNOLOGY – ANNUAL PERFORMANCE PLAN FOR THE 2014/15 FINANCIAL YEAR**

**1. Introduction**

The Annual Performance Plan (APP) of the Department of Science and Technology (DST) outlines its blueprint to realising its mandate “to unlock the potential for economic growth through science, technology and innovation (STI). The APP addresses the need for human capital development (HCD) and for the continuous modernisation of scientific infrastructure”<sup>1</sup>. Both the Budget and the APP form a great tool that the Department will use in fulfilling its mandate. Both these documents also form a key tool by which the Portfolio Committee on Science and Technology can review and scrutinise the work of the Department in fulfilling its oversight role.

This paper is intended to form part of 3 key papers that introduces the members to the Department of Science and Technology, the Budget of the Department and the plan by which the Department intends to fulfil its mandate. All these 3 paper are interrelated and have been provided as a holistic and combined “eye piece” into the inner workings of the Department.

**2. Structural Changes and Performance Plans**

The internal structure of the Department has changed in 2014/15 to incorporate the recommendations of the 2012 Ministerial Review Committee report on the Science, Technology and Innovation Landscape in South Africa.

**Table 1: Structure of DST programmes**

Old Programme Name	New Programme Name
Administration (of the Department)	- <sup>a</sup>
Research, Development and Innovation	<b>Technology Innovation</b>
International Cooperation and Resources	- <sup>a</sup>
Human Capital and Knowledge Systems	<b>Research Development and Support</b>
Socio-economic Partnerships	<b>Socio Economic Innovation Partnerships</b>

-<sup>a</sup> Name has not changed

<sup>1</sup> Department of Science and Technology ( 2014).



### a) Programme 1

There were no changes in the structure of Programme 1 as indicated in table 1. Of the 5 sub-programmes mentioned in the budget analysis, the APP further split these sub-programmes into 9 sub-programmes. The most important of these 9 to focus on is the *Policy, Planning, Governance and Evaluation* sub-programme, which is put in place to support the Department's leadership in steering the National System of Innovation (NSI). The NSI is currently not well co-ordinated and it is the responsibility of this sub-programme to help the Department achieve this goal. One of the ways in which this sub-programme is intended to support the leadership is to ensure that activities of the NSI answer policy questions of the economy.

Over all, in terms of management, the Department of Science and Technology is rated as the best managed national department<sup>2</sup>

### b) Programme 2

Programme 2 has a few changes from the previous 5 years. Firstly the name has changed from *Research, Development and Innovation* to *Technology Innovation* to reflect the recommendation of the Ministerial Review Committee that the Department needs to improve the innovation capacity of the NSI. The emphasis for Programme 2 now is not on knowledge generation per se, as it was before, but rather more on knowledge exploitation and commercialisation thereof. The research areas have been expanded to include Space Science, Energy, Biotechnology, Nanotechnology, Robotics, Photonics, Indigenous Knowledge Systems, Intellectual Property Management, Technology Transfer and Technology Commercialisation. Whereas before these areas were only limited to Space Science, Biotechnology, Health and Energy.

*Radio Astronomy Advances* sub-programme, which is more in line with knowledge generation activities was therefore moved to Programme 4, which now focuses only on knowledge generating activities. The *Space Science* together with *Hydrogen and Energy* sub-programmes remained unchanged. The *National Intellectual Property Management Office (NIPMO)* is now a Specialised Services Delivery Unit (SSDU) within the Department and falls in the area of innovation support. The *Biotechnology and Health Innovation* sub-programme has been merged into the new inclusive *Bioeconomy* sub-programme to reflect the incorporation of Indigenous Knowledge (IK) based Technology Innovation Unit in this programme. The *Bioeconomy* sub-programme is responsible for the implementation of the Bioeconomy Strategy which was approved by Cabinet last year.

The *Innovation Instruments and Planning* sub-programme which facilitated the establishment of the Technology Innovation Agency (TIA), the finalisation of the Intellectual Property Rights

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<sup>2</sup> The Presidency (2013).



from Publicly Funded Research and Development (IPR-PFRD) Act that provided for the establishment of NIPMO is now known as *Innovation Priorities and Instruments*. Offices of Technology Transfer (OTT), which were a responsibility of *Innovation Instruments and Planning*, are now moved under this more fitting NIPMO sub-programme. The *Innovation Priorities and Instruments* sub-programme will continue to support and strengthen the innovation policy to enable commercialisation of publicly funded research and development.

Programme 2 is now more organised and packaged to deal with the innovation and commercialisation programme of the Department. More emphasis should be focused on TIA, NIPMO and the OTT at universities to ensure that the dreams of producing products and services from publicly funded research and development is realised. The slogan "Patent before you Publish" should be observed in taking innovation and commercialisation forward. TIA has been the result of the Departments failures in the past few years, and this has been pointed to a misalignment of entity objectives with those of DST. This anomaly needs to be monitored closely going forward.

#### **c) Programme 3**

There were no changes in Programme 3 as seen in table 1. This is the one programme of the Department that always perform well. Year on year, the targets of this programme are always achieved on time.

#### **d) Programme 4**

As indicated before, this programme is now dedicated purely to knowledge generating activities and particularly to human capital development and the modernisation of science and technology research infrastructure in South Africa. The name for the programme has changed from *Human Capital and Knowledge Systems* to *Research, Development and Support* to reflect exactly what has been said above.

The *Human Capital and Science Platforms* sub-programme becomes *Human Capital and Science Promotion* to reflect the emphasis on the promotion of human capital development. Almost half of DST budget for 2014/15 is dedicated for Programme 4 to reflect this commitment to HCD. The Human Capital Development Strategy for Research Innovation and Scholarship (HCD RIS Strategy), which falls within this sub-programme has been developed. This strategy needs close attention especially interrogating the calibre of the majority of science graduates in South African universities and the availability of suitable and capable supervisors for science students.

*Emerging Research Areas and Infrastructure* sub-programme has changed into *Basic Sciences and Infrastructure* in order to focus on the provision and implementation of research and innovation equipment and infrastructure to promote knowledge production. This is also an area that needs attention especially in the high-end sciences such as chemical structural



determination, next-generation sequencing and trace element determination in forensic sciences.

*Radio Astronomy Advances* sub-programme, which is more in line with knowledge generation activity was therefore moved into this programme as indicated before. *Indigenous Knowledge Systems* (IKS) sub-programme has been moved from Programme 4 into Programme 2 under the *Bioeconomy* sub-programme to reflect the inclusion of IK based technologies in the Bioeconomy Strategy as stated before.

A new *Science Missions* sub-programme has been added to promote research in areas in which South Africa enjoys a geographical advantage. These areas of research are climate change, Antarctic and marine research, palaeosciences and IKS.

Programme 4 has performed fairly well in the past and is expected to perform even better now that the innovation activities related to IK based technologies have all been migrated into the more fitting programme 2 under the *Bioeconomy* sub-programme.

#### **e) Programme 5**

Programme 5 changed from *Socio-economic Partnerships* to *Socio Economic Innovation Partnerships* again to include the innovation element in research that has potential impact in the society. Functions of the *Science and Technology for Economic Impact* were split between two new sub-programmes. These new sub-programmes are *Technology Localisation Beneficiation and Advanced Manufacturing* and *Sector Innovation and Green Economy*. The *Science and Technology for Social Impact* becomes the *Innovation for Inclusive Development* sub-programme, but the mandate has stayed the same. *Science and Technology Investment* sub-programme has not changed.

All-in-all, mainly name changes occurred in Programme 5 and the inclusion of the new sub-programme that deals with green economy. The main performance drawback for this programme has always been related to the ability of TIA to provide technology support to small and medium enterprises (SMEs). The reasons for the lack of sufficient support (not meeting targets) to small businesses by TIA is related to the fact that the small businesses receive the service only if they request it. However, TIA need to strengthen the marketing of such services as this is the area in which the economic impact of science and technology research and development would translate to economic growth.



## ISSUES FOR CONSIDERATION:

- How far has the problem of misalignment of the Technology Innovation Agency (TIA) objectives to those of the Department been solved? What are the immediate successes of the alignment measures put in place in terms of the related problematic targets?
- One of the related problematic targets relating to the number of small and medium enterprises supported by TIA through the Technology Stations programme has been removed from Programme 5. How is the Department planning to strengthen the marketing of these Departmental services? What other services have been requested by small business and the Department haven't been able to provide? What is the plan to make such services available?
- What measures has the *Policy, Planning, Governance and Evaluation* unit put in place to ensure that the leadership of the Department manages and co-ordinates the National System of Innovation effectively?
- What innovation policy instruments has the Department put in place so far and how effective are they? What new measures or capabilities is the *Innovation Priorities and Instruments* bringing forward to improve the innovation space within the National System of Innovation?
- Where are the vacant posts in the Department? What management advisory skills are lacking? What other ways will the Department use to deal with this shortage of skills other than paying consultants? What measures are put in place to keep the vacancy rate low?
- How is the Department encouraging disclosures at the OTTs especially from publicly funded research and development? What measures are put in place to ensure that the responsibility of disclosure supersedes the desire to publish for personal gains especially when researchers are publicly funded and are conducting projects where there is potential commercial value?
- The number of commercialised products from the investments of TIA have been revised to 1 product per year, from 3 products per year in the previous years. This is understandable, but the reasons given for these failures of TIA was the misalignments that should have been resolved now. What explanation warrants for this down grading of this target? In the light that misalignments have been taken into account.
- How reasonable is the target of 574 Innovation support interventions by 31 March 2017? On average since 2010/11 until 2012/13, only 23 were achieved per annum. The Department expect to achieve 285 in 2014/15 alone. How is this possible? The Department must please explain this drastic jump in numbers.
- Why have the numbers related to the number of post-graduates produced in key strategic areas dramatically dropped from 200s since 2010/11 to only 6 in 2014/15? What has been the change of focus? Human Capital Development is a key focus for the Department and the numbers should reflect this focus across the board.



#### **FURTHER ISSUES FOR CONSIDERATION CONTINUED:**

- The number of trainees in areas of strategic importance around innovation also need to be closely monitored to ensure that the Department delivers on the innovation mandate.
- Of the international and regional agreements listed in the Department of International Relations website, which ones are active and which ones have expired? How is the Department planning to enhance regional co-operations in areas of innovation policy and research particularly? How is the Department planning to leverage regional funds and service providing capabilities in order to advance regional research and innovation needs?
- How does the Department tracks and monitors the provision and approval of grants for large strategic equipment to ensure that it is in line with the innovative focus of the economy going forward?
- Only one MeerKAT antennae has been installed since 4 months ago (February/March 2014). How is the Department planning to ensure that all 64 dishes will be up by 31 March 2017? And what is the basis for such a planning scheme? In the 2014/15 APP reference is made to 62 dishes, it should be 64 dishes.
- The Department needs to present the Science, Technology, Engineering, Mathematics and Innovation (STEMI) promotion and engagement strategy for the National System of Innovation (NSI). The development of the implementation plan for STEMI also needs to be closely monitored.
- What funding instruments will the Department put in place to encourage research and development (R&D) led industry development? Already there is the R&D Tax incentive to encourage research and development in the industry. The impact of this incentive on innovation needs to be monitored.
- Another target that needs detailed monitoring is that related to the number of knowledge and innovation products, patents, technology demonstrators, technology transfer packages or prototypes generated. It has been doing well so far but needs constant monitoring as it speaks to the very core of realising economic growth through science.



## 5. Conclusions

It is clear that the Department of Science and Technology has thought about alignment of its programmes and sub-programmes in order to streamline the provision and delivery of its mandate which is to co-ordinate the NSI and unlock potential for economic growth through science. Various instruments of the innovation system need careful attention and interrogation. The Department must give reasons for setting some targets below what they can actually deliver based on past performances.

## 6. References

Department of Science and Technology (2014). *Annual Performance Plan 2014/15*

The Presidency (2013). *National Departments Synopsis of Management Performance Assessment Tool Results 2012/13*

