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Minister Naledi Pandor: Science and Technology Dept Budget Vote 2015/16

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"Science and innovation: driving forces for future growth"

Chairperson, honourable members, guests in the gallery, I'm pleased to present the 2015/16 budget and programme plans of the Department of Science and Technology (DST).

Much of the work of the national innovation system involves medium to long-term horizons. Thus we say our work will shape the future.

Our budget for 2015/16 increases modestly to R7.4 billion. Although we are working closely with colleagues in Treasury to map out a process for ensuring we reach the ANC Manifesto target of 1,5% of Gross Domestic Product (GDP) by 2019, I remain concerned that inadequate resources for research and innovation will deny us the opportunity to realise the full potential of the difference science and innovation can make in a society.

We fully accept the restraints government has placed on public expenditure, but we assert that investment in research and innovation can and will lead to greater prosperity, more jobs, and more entrepreneurs. I hope to show today that science and innovation are driving forces for future growth.

The results of several of our programmes show clearly that the support we have received has placed us in an excellent position to respond to South Africa’s triple challenges of unemployment, inequality and poverty.

I would like to introduce some of our guests in the gallery who confirm this. They represent hundreds who have benefited from technology and innovation support through the DST. We want to convert these hundreds to thousands and then millions.

I welcome Mr Whiskey Kgabo, who supplies mangoes to the Nkowankowa Demonstration Centre in Limpopo and Ms Suzan Malangana who wrote me a letter in which she thanked government for supporting the Centre that has enabled her to build a house and pay school fees.

The DST repositioned the Nkowankowa Demonstration Centre over the last two years, so that it can support small backyard mango producers in the Tzaneen area to supply mangoes, at fair-trade prices, that can then be used to produce higher-value products such as dried fruit and juice. Links have been established with the University of Limpopo, which provides agricultural support services that help to increase yields and the quality of mangoes. The Nkowankowa Centre is now registered as a formal legal entity known as Wolfsbergs Fruit Processors. We will be using the experience gained with the Centre to feed into the broader government programme aimed at establishing agro-processing hubs.

I also welcome in the gallery, Jacobus Viljoen, Thululeni Dube, Tshifhiwa Maano and Stephanus Viljoen, who run the Iluba project. It generates an annual turnover of more than R10 million and employs more than 75 people. The project uses technology developed by the Nelson Mandela Metropolitan University to embalm roses to enable them to last for up to two years. These flowers are now exported to Europe, the Far East, the Middle East and North America.

Also in the gallery is a team from MLab consisting of young people from Angola, South Africa and the Democratic Republic of Congo. They have developed an app for an online anti-xenophobia campaign, namely, #We Are Africa. They have shown that innovation, science and technology can assist society in dealing with socio-economic challenges. #WeAreAfrica is a driving force for the future.

I would also like to welcome nine of the brightest young scientists in the country. Selected from the Eskom Expo for Young Scientists, they will be representing South Africa at international science events in London and Belgium in July this year.

The Freedom Charter calls on us to open the doors of learning and culture to expand access to knowledge and to let all the talents of our nation bloom. We are opening doors by firmly supporting the National Development Plan and the ambitious objectives it has set out for a South Africa of the future.

As we mark and celebrate sixty years of the Freedom Charter we say to the people of South Africa, we in Science and Technology and the institutions we work with are fully committed to invest in and support a great future for South Africa.

I also want to say to the youth at school, college and university we call on you to study mathematics, science and technology so you can play a full role in creating a better Africa and a better world.

Future employment through innovation

I believe that science and innovation catalyse future growth and new jobs. But there are a number of actions we must take. First, we must add greater value to raw materials using innovation and technology. This will create new firms, and help build entirely new industries. Second, we must keep pace with global trends and capitalise on them to identify new economic opportunities. In the past decade ICTs, additive manufacturing and the secondary resources economy are areas in which we have made some progress.

Some of our programmes are exploring these shifts. We will succeed with some and create future enterprises. We will fail with a few for a range of reasons. We must learn to take risks and not be afraid to fail.

Honourable Members, our two technology programmes - 'technology innovation' and 'socio-economic innovation partnerships' - have been allocated R2,8 billion for the year ahead.

We have a balanced portfolio of several high potential new-industry development initiatives that support diversification. In 2015/16 will we invest a further R77 million in the following key initiatives:

- in the third phase of the Fluorochemicals Expansion Initiative (FEI);
- in the fourth phase of the Titanium industry development programme;
- in the Fibre Composites RDI Programme to enhance export competitiveness and import substitution in 10 companies in the boat-building, aerospace and industrial composites sub-sectors;
- In 8 ICT based companies that have already emerged as a result of investments made in the implementation of the ICT RDI road map over the past few years;
- in the development of the Aeroswift, a next-generation additive-manufacturing platform, which will lead to the supply of 5 newly qualified titanium metal aerospace parts for the global aerospace market. All of these initiatives create new jobs.

We will also continue to assist existing economic sectors to ensure they use research and innovation to become globally competitive. Our public-private partnership with industry and other stakeholders has resulted in the creation of nine Sector Innovation Funds.

The priority sectors are aligned to sectors in the National Development Plan and include citrus, sugar, post-harvest, forestry, boat-building, aquaculture, wine, minerals processing and paper manufacturing. We provided seed funding of R16 million in 2014/15. A further R51.6 million is for innovation projects within the nine sectors.

Our Technology Localisation programme which began in 2011 assists local companies to take advantage of public procurement programmes by strengthening their technological capabilities. We have assisted over 140 manufacturing companies thus far. New jobs have been created and 20 companies have secured new contracts with state owned enterprises.

An additional R95.6 million is available in 2015/16 for benchmarking and customised Technology Assistance Packages. A new mechanism, the Sector Wide Technology Assistance Programme will be launched with the opening of a National Simulation Network this July at the Vaal University of Technology.

We are also making progress in the fields of health innovation and bio economy through partnerships with industry in the pharmaceutical sector and the agricultural sector. For example, through our work in indigenous knowledge we have registered 7 patents supported 20 PhDs and 39 Masters students, and trained 198 community members in technology transfer and skills development.

We have established two agro businesses and signed IP agreements with L'Oreal, Nestle, Kalahari, Nativa, Afrlex and several other companies. This year we will launch three more enterprises, in agroprocessing, and commercialisation of value added products in Mamelodi (Gauteng), Tooseng (Limpopo), and Hamaanskraal (North West).

The Council for Scientific and Industrial Research also shows how focused science and technology interventions can support small, medium and micro-enterprises. Let me give you an example. Six biotechnology Small Medium Micro Enterprise (SMMEs) have been given access to world-class bio-manufacturing facilities and research expertise since the launch of the Bio-manufacturing Industry Development Centre in October 2013. Since the start of the Centre, 26 permanent jobs and 56 temporary jobs have been created and more than 80 individuals have received training. The Centre is aiming to have created 180 permanent and 85 temporary jobs by September 2016.

These initiatives create a brighter future for communities by supporting growth, providing income and skills training. Each of these programmes includes support for post-graduate training at various universities throughout South Africa.

In most instances funding for technology innovation is channelled through the Technology Innovation Agency (TIA), which receives R385 million in 2015/16. TIA has implemented a successful turn-around strategy and now has a new CEO, Mr Barlow Manilal. In other instances, we support commercial activities through mission-oriented R&D funding programmes and industry support initiatives: for example, the HySA Strategy; and the space-science programmes led by SANSA.

In June 2015 we will see the graduation of the third cohort of the DST/Technology Top 100 industry interns. This programme was started in 2012 as a three-year pilot with the specific aim of providing a first workplace opportunity for unemployed science engineering and technology graduates in technology-based companies affiliated with the Technology Top 100 business awards programme and related networks. Our internship programmes support over 1400 interns each year.

Protection of the intellectual capital that we develop is essential if we are to compete in global science research. The National Intellectual Property Management Office (NIPMO) plays this role in all higher education institutions and science councils, providing the funds to employ a number of professionals within the offices of technology transfer established at these institutions. NIPMO is actively monitoring over 800 different pieces of IP created since August 2010, which are being managed, utilised and commercialised by our higher education institutions and science councils.

We are working hard to encourage our universities to become more adept at using new knowledge to create spin-off companies in order to support our growth targets. The support offered by TIA and NIPMO is very important in this regard. I was pleased to learn that Professor Lesley Scott of the University of the Witwatersrand won the social-impact prize in the Innovation Prize for Africa Awards held last week in Morocco, and that this innovation will lead to the creation of the first WITS University spin-off company in over five years.

Chairperson achieving our ambitions depends on creating larger numbers of knowledge workers, researchers committed to innovation, generating new knowledge that can in future be translated into new enterprises and products. We also want researchers to lead our research agencies and science faculties.

Addressing inequality through knowledge

Our human-capital-development initiatives are making very positive progress. I believe our recently completed human-capital-development strategy will help us respond to the ambitious targets set by the National Development Plan. We allocated R4,2 billion to our research development and support programme for 2015/16.

Our three flagship race and gender equity initiatives continue to have a positive impact on our objective of building a more inclusive society that has the skills to advance the establishment of a knowledge-intensive society.

The first initiative is the Thuthuka programme that provides funding to emerging researchers to work on PhDs, post doctorals, and NRF rating. It has equity targets of 80% black and 60% female grant holders. The programme's cumulative investment over the 14 years since 2001 was R242 million.

The second initiative is the Centres of Excellence (CoE) programme. The majority of the centres are located in the research-intensive universities. We will consider a programme in future targeted at historically disadvantaged universities. The cumulative investment in the centres since 2004 is R538 million. In 2015/16 R127 million will be provided to support the COEs.

CAPRISA is our 15th and newest Centre of Excellence. Since its creation in 2002 at University of KwaZulu-Natal (UKZN), the R120 million-a-year research unit has undertaken pioneering research into HIV that has shaped global responses to the epidemic. Their international collaboration has built a bridge between researchers in the North and the South. They ensure that we are not simply a consumer of health technology but that we play a key role in developing innovative solutions to our country's and Africa's health priorities. As the recipient of our investment of R50 million over the next five years, we expect much from them in the future.

The third initiative is the South African Research Chairs Initiative (SARChi), in which we invest R470 million in 2015/16. It's aimed at increasing research capacity by funding post-graduate students and emerging researchers. The investment in the programme between 2006 and 2012 amounted to R870 million from government and an additional R1.7 billion leveraged from industry partners. Currently we have 150 occupied chairs. They have trained 406 doctoral students (42% female, 67% black), mentored 140 postdoctoral fellows, produced 1 568 peer-reviewed articles, 37 books and 197 book chapters in diverse fields.

There are two new SARChi developments to note. The first is 20 new chairs for women only. During the 2014/15 financial year I approved the award of twenty new SARChi posts, this time reserved for female South African citizens and permanent residents. This is to address the fact that only 35 of the 150 current SARCHi holders are women and to ensure that more women lead science institutions.

The second development is a country-bilateral SARChi programme. The first country-bilateral will be with Switzerland, and a research chair in environmental health will launched next month at UCT. The second will be with the UK and a call for three chairs is currently underway. The candidates must be based in a UK institution and be able to spend 50% of their time in both countries for the duration of the Chair term. The third country-bilateral SARChi will be with Germany and is currently under negotiation.

The aim is to attract more South African African students into postgraduate research degrees – and ultimately into research and/or academic careers. We will expand our programme to increase access to international training opportunities for South African students, especially for PhD candidates. Over the past year, we secured opportunities for more than 1,500 South African researchers and students to participate in various international training and exchange programmes.

We will step up this effort. In 2015 we will support South African PhD students to study abroad. Under a new dedicated programme, we will start with a modest number of 50 candidates, but the number will be significantly and rapidly increased in coming years.

We will also work to attract to South Africa a large number of young international researchers, who have recently completed their PhDs and who are looking for a post-doctoral project. The goal will be for these “post-docs” to spend time in South Africa, to further their research careers, and to assist with undergraduate training, especially in critical areas in which we lack capacity.

To develop and maintain a productive and internationally competitive academic and research and development sector, it is essential to invest in all dimensions of human resource development. While we have increased support for next generation researchers, funding for 'established researchers' has lagged behind, and only increased by 22% over the same period.

'Established researchers' supervise, instruct and mentor the majority of the next generation and emerging researchers and produce the bulk of the country’s knowledge and innovation outputs. So it's essential that they have adequate funding. From 2015/16 an additional R100 million will be used to increase the aggregate value of the grants to established researchers.

In addition, the DST will intensify its efforts to raise awareness of S&T and to encourage more young people to choose mathematics and science as subjects at secondary level and to choose careers in the sciences and engineering. Our recently developed Mzansi for science communication strategy will assist in reaching young people.

Leading innovation nations invest significantly in developing international science partnerships. We do as well. We are busy expanding our diverse portfolio of international partnerships in science, technology and innovation.

I wish to highlight two international partnerships that are going to be driving forces for South Africa and Africa's future growth.

The first is the second phase of the European & Developing Countries Clinical Trials Partnership (EDCTP) that was launched in Cape Town in December last year. Over the past few years the first phase of the EDCTP has contributed immensely to accelerating the development of new interventions to fight HIV/Aids, malaria and tuberculosis and to enhance Africa’s research capacities in relation to these diseases. The second phase EDCTP is a public-public partnership between 13 European and 13 sub-Saharan African countries. The ten-year budget is €1.9 billion. We aim to use the EDCTP to free Africa from depending on others to address our health challenges.

The second is Square Kilometre Array (SKA), currently our largest science and engineering partnership. In March 2015 the Board of the international SKA Organisation agreed on the design of SKA1, the first phase of the SKA, and €650 million is budgeted for its construction. The detailed design is now proceeding. Construction of SKA1 is expected to start in 2018.

In the mean time, SKA SA is constructing 64 MeerKAT dishes in the Karoo. Early science with 32 dishes will start in 2016 and science with the full array by the middle of 2017. The dishes, designed and built for the MeerKAT by a South African company with 75% local content, are performing much better than specified. We contribute R701 million to SKA this year in anticipation that frontier research in astronomy will create new jobs.

The SKA SA team has also developed other innovative technology, including fast and flexible computer boards and tools. These are being used around the world, including by the NASA Deep Space Programme. We are working on very innovative high performance computing hardware and algorithms for very fast computing power with low energy demand.

Big Data is one of the most important spin-offs from the SKA. The challenges in dealing with the flood of data will be faced in the commercial environment in five years time. So we are in a good position to develop South Africa and Africa's capacity to compete in the Big Data industry, which will be worth trillions of dollars in investment and thousands of jobs in the next decade, and will affect us all. New ideas that spark new investment opportunities will create new jobs for South Africans. We also plan to create and implement a Data Intensive Research Initiative of South Africa this year.

We continue to support the Centre for High Performance Computing. The Centre has been accredited as a member of the international SKA Science Data Processing Consortium, responsible for the development of three work packages, namely, science data processing, test-bed architecture for the exascale computing and a data distribution model. The Centre also champions the strategic initiatives in support of high-performance computing in the 8 African SKA partner countries. Through these programmes the Centre is increasing its visibility and footprint on the continent as well as internationally and hence positioning itself as a preferred service provider for the provision of high performance computing capabilities for the SKA international project.

This is where science academies like Academy of Science of South Africa (ASSAf) have a crucial role to play. ASSAf plays a major role in representing South African science abroad. ASSAf is widely regarded as one of the strongest and most productive national science academy on the African continent. ASSAf is widely sought after as a partner for activities initiated by both other African science academies and by academies of the developed world. It has embarked on a major initiative to strengthen and initiate science academies in the Southern African Development Community (SADC) region and as such has the potential to contribute significantly to Science and Technology (S&T) development in the SADC region.

Over the past year we have been successful in expanding our portfolio of African partnerships by concluding new cooperation agreements with Sudan and Ethiopia, and by implementing ambitious cooperation programmes with Zambia, Angola, Tanzania, Ghana and many more. We have played a leadership role in finalising the African Union’s space policy and strategy due to be adopted later this year by Heads of State. In 2015, our efforts will be guided by a new African engagement strategy, which will more effectively coordinate the activities of all South African science, technology and innovation actors engaged in partnerships with the rest of the continent.

Chairperson, honourable members we have provided you with a fact sheet that sets out more of our programmes and ambitions. As you can see our entities and our universities are involved in a wide variety of programmes all of which will contribute to building a sustainable future for South Africa and decisively contribute to the development goals of our country, the continent and the world.

I wish to thank the DG, the DDGs and the entire DST and our entities for the wonderful support we always receive. It is empowering to work with such a talented team.

I congratulate Dr Albert van Jaarsveld on his appointment as Vice Chancellor of UKZN. I also wish to thank Dr Olive Shisana for her sterling leadership of the HSRC over many years. She leaves a robust research institution that has benefitted immensely from her knowledge and talent.

I also wish to convey my warm good wishes to our Deputy Minister. I am looking forward to having her back in the Ministry.

Thanks too to the staff in the ministry, my team of advisers and Boitumelo, to the Portfolio Committee, leaders of our entities, my family and all of you honourable members.

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