

**Address by the Minister of Science and Technology, Naledi Pandor MP, on the occasion
of the Science and Technology budget vote**

22 Jul 2014

Chairperson,
Honourable Members,
Ladies and gentlemen,

Today we celebrate twenty years of freedom and positive progress in advancing research and innovation in the science and technology sector. Some of our many successes include advances in research into HIV and AIDS prevention and treatment, satellite building, winning the right to co-host the iconic Square Kilometre Array, discoveries in palaeontology, progress with alternative energy technologies, advances in fluoro chemicals, technology for improved service delivery. Through investing in research and development and innovation the ANC has made significant contribution to meeting our triple challenges of poverty, inequality and joblessness.

The African National Congress (ANC) won the last election on a manifesto that included a commitment to increase investment in research and development to 1.5% of Gross Domestic Product (GDP) in this term of government. The ANC was the only party to make such a commitment. This signalled our belief that science and technology will play a prominent role in the radical socio-economic transformation of South Africa.

We are emboldened by the science and technology objectives outlined in the National Development Plan and believe that the report we will present to you today clearly signals that Vision 2030 is achievable.

The Department of Science and Technology (DST) 's budget appropriation for 2014/15 is R6,47 billion.

The largest portion of the DST's budget, R3,5 billion, is allocated to research and development. Of this, R1,7 billion is to be spent on research grants and bursaries. And in terms of guidelines I have provided we will focus on the following transformation targets over the Medium Term Expenditure Framework (MTEF) period by increasing:

- The ratio of black to total researchers from 28% in 2013/14 to 40% in 2016/17.
- The ratio of female to total researchers from 36% in 2013/14 to 50% in 2016/17.
- The ratio of black to total graduate students funded from 63% in 2013/14 to 71% in 2016/17.
- The ratio of female to total postgraduate students funded from 53% in 2013/14 to 55% in 2016/17.

The National Development Plan sets a target of 100 000 PhDs by 2030 to improve research and innovation capacity. In order to reach this target we need train 6 000 PhDs per annum. We now produce just over 1 800 PhDs per year. To train 6 000 a year will cost an additional R5.8 billion a year.

Currently we lack research-supervision capacity and the doctoral-student pipeline is too narrow. We need to support researchers who are capable of supervising post-graduate students, and to create appropriate incentives for students to remain in the system up to doctoral level. We have recently begun investing in emerging researchers through post-doctoral fellowships in the Thuthuka programme, and research-career-advancement fellowships.

In order to attract young people to science, the DST will invest R497 million over the MTEF period in implementing a coordinated approach to science education, science awareness and science communication. The programmes – run through the South African Agency for Science and Technology Advancement (SAASTA) – will reach about 350 000 learners and about 12 500 to 13 000 teachers per annum. The recent review of the NRF indicated the need to reconsider the location and the funding model for SAASTA. We need a model that will allow SAASTA to scale-up public engagement and science awareness activities.

Our internship programme has supported youth development and employment. Between 2012 and 2014, 1 341 unemployed graduates were exposed to work experience in science, engineering and technology institutions. Of these, 58% were absorbed into permanent employment in the same institutions. Others have found employment elsewhere. The DST has allocated R80 million to fund 1 000 science postgraduates in the 2014/15 internship programme.

The South African Research Chairs Initiative (SARChI), one of the DST's flagship programmes, has a total of 157 awarded chairs, 128 of which have been filled. Of these, 73% were recruited in South Africa, 21% are women and 28% are black. The DST plans to create an additional 20 chairs. The initiative has contributed to the transformation of the system by increasing the number of black and female researchers. Since its inception, the number of black postgraduate students has increased by 400%, and the number of female postgraduate students by 450%. We spend R451 879 on SARChI this year.

We have established Centres of Excellence to promote inter disciplinary collaboration in research excellence. There are now 14 centres, and investment in them has increased at an average of 20% a year since 2010/11. We are exploring a further three centres - in Aids, human settlements and water research, all in collaboration with other departments.

We have established Centres of Excellence to promote inter disciplinary collaboration in research excellence. For example, the South African Centre for Epidemiological Modelling and Analysis (SACEMA) focuses on research in quantitative modelling of disease, with a strong focus on relevance to public health policy. The policy to circumcise men to reduce the HIV infections was a consequence of a SACEMA study/research. Or the Centre of Excellence on TB pioneered the use of molecular methods to characterise M. tuberculosis strains, and these techniques are now used throughout Africa to gain insight into the mechanisms driving the epidemic. There are now 14 centres, and investment in them has increased at an average of 20% a year since 2010/11. We are exploring a further three centres - in Aids, human settlements and water research, all in collaboration with other departments.

To enable South Africa to compete globally, we need to provide world-class infrastructure for research and development. One of these is iThemba LABS. iThemba LABS is the only facility on the African continent that provides accelerator-based radioisotopes for nuclear medicine, and also the only facility in Africa for specialist cancer treatment using protons and neutrons. This treatment is offered to those who have cancers that do not respond to traditional treatments like chemotherapy and radiotherapy. Patients referred by state hospitals are treated free of charge, and over the past 25 years some 1 800 patients have been treated.

We continue to make progress on the Meerkat project, for which R647 million is allocated in 2014, as well as building global partnerships for SKA. Preparing for the huge amounts of data produced by the MeerKAT and the Square Kilometre Array (SKA) is also preparing South Africa to play a leading role in 'big data'. We believe South Africa can become a global leader in this area if we make the right interventions now.

I am pleased to announce that many students have been awarded grants by the SKA Project. The success rate of the programme has been very high, with 36 doctoral degrees, 95 master's degrees, 59

honours degrees, 58 BSc and BEng degrees and 16 national diplomas awarded. The SKA is also supporting the training of artisans, and has awarded 42 bursaries to students from the Karoo, 16 of whom are already employed by SKA South Africa.

The global SKA project is growing. India is expected to become a full member of the SKA Organisation soon, joining an alliance of countries that are currently investing close to R2 billion in design and other preparatory work. Our partners in Australia, Canada, China, Italy, the Netherlands, New Zealand, Sweden and the United Kingdom are all firmly committed to the SKA. Compared to other large-scale research infrastructure projects of its kind, the progress of the SKA is remarkable. This is in no small measure due to South African leadership and know-how. Dr Bernie Fanaroff and his team continue to do us proud.

The African Very Long Baseline Interferometry Network (AVN) is being rolled out and will involve our eight SKA African partner countries. Through the AVN programme, SKA South Africa, in partnership with the Hartebeesthoek Radio Astronomy Observatory, has also trained scientists and engineers from Ghana and Kenya, 13 of whom have spent six months to a year in South Africa. The AVN programme will continue to assist them with further training in their home countries, and will help them to train more technicians and scientists.

Astronomy partnerships have also been initiated with China, India, Netherlands, United Kingdom and the United States of America. Leading global astronomers such as Prof Russ Taylor are relocating to South Africa, taking up positions under the South African Research Chairs Programme, attracted by South Africa's commitment to and investment in science. We are becoming a preferred destination not only for global research infrastructure but also for global research talent.

The South African National Space Agency (SANSA) receives R118 million this year. It provides valuable Earth observation data to enable informed decisions by government departments and public entities.

SANSA continues to provide state-of-the-art ground-station services to many globally recognised space missions, such as the NASA and Indian Space Research Organisation Mars missions, and NASA's Orbiting Carbon Observatory-2, which is giving scientists a better idea of how carbon is contributing to climate change, answering important questions about precisely where carbon is coming from and where it is stored.

We have reorganised the programmes in the DST to give greater emphasis to technology. We now have a programme called 'technology innovation' with a budget of R991 million. It's main agency is the Technology Innovation Agency.

We aim to reposition TIA as an agency whose funding instruments will enable entrepreneurs and small and medium enterprises to commercialise their technology innovations. Since 2010 TIA has disbursed a total of R1,2 billion on project contracts and grants. The agency has supported close to 6 838 small and medium enterprises in accelerating technical innovation through technology development at a cost of R286 million. The services provided by TIA have enabled the enterprises to be more competitive and productive. The agency has also funded the placement of 501 interns in various sectors, including at offices of technology transfer and in venture capital companies.

A few examples illustrate TIA's contribution to innovation. Through support from TIA, Future Fynbos, a company that focuses on the selection and breeding of indigenous fynbos, has shipped its first commercial harvest, with 600 355 units sold in the local market and 10 000 units in the European Union. TIA also made a significant contribution to the University of Cape Town's H3-D Centre, which is Africa's first modern integrated drug discovery and development centre, and has over the past four years had remarkable success, delivering the first clinical drug candidate to come from Africa. Additional funding of

R55 million was leveraged from the Bill & Melinda Gates Foundation to support tuberculosis and malaria drug development programmes. The centre also received R3 million from the Wolfson Foundation towards infrastructure improvement.

I would like to congratulate Marlize Holtzhausen, who is in the gallery. Her Rapid Response cellphone app won the internationally renowned 2014 Googlefest pitching competition for technology entrepreneurs. Her participation in this contest was supported under the Swiss-South Africa Business Development Programme, an example of our thriving portfolio of international partnerships, and I thank our Swiss partners for their support in this successful initiative. Other finalists were Drew van der Riet, working on advanced prosthetics, and Gavin Jones, who represented a University of Cape Town project on the rehabilitation of stroke patients.

Our support for research and development work in clean coal technologies through the carbon capture and storage chair at the South African National Energy Development Institute is bearing fruit. The Coalgae™ initiative, part of the DST-funded biofuels programme at the Nelson Mandela Metropolitan University, will in the 2014/15 financial year strive to find partners to upscale the semi-commercial pilot plant and also to find potential investors for the commercialisation of this technology.

Another success is the Photovoltaic Technology Intellectual Property (PTIP), a solar energy spin-off company from the University of Johannesburg, which was started in 2013. PTIP, in collaboration with a German-listed company (Singulus), manufactures photovoltaic thin films and is one of the very few global companies that are using copper indium gallium selenide. The DST is working closely with private sector partners to ensure the full commercialisation of the plant and the creation of jobs for the human capital being developed in institutions. This will be a huge contribution to government's mandate of tackling poverty, inequality and unemployment.

As members can see, South Africa through the DST is fast becoming a preferred partner for research and innovation funding partnerships with international foundations. I believe that more funding should be available to the Technology Innovation Agency to fund commercialisation, as we do not as yet have a dynamic risk-taking venture capital system in South Africa. We are grateful to all our partners for their support.

In 2012 I announced the launch of the DST-Technology Top 100 internship programme, aimed at placing unemployed science, technology and engineering graduates in high technology companies. I am happy to report that the programme has over the last two years had an intake of 105 interns and that 25% of these interns have found permanent employment with their host companies at the end of the one-year programme. This year a further 65 candidates have been placed with companies in Gauteng and the Western Cape. We intend to grow the network of private sector companies interested in assisting us.

The DST's Socio-economic Innovation Partnerships Programme receives a budget allocation of R1,5 billion. Of this, the Human Science Research Council (HSRC) receives R276 million and the Council for Scientific and Industrial Research (CSIR) receives R826 million. The CSIR is the biggest and best-resourced science laboratory complex in the country. It accounts for 15% of government expenditure on research and development. Recently the CSIR adopted water sustainability, health, and safety and security as areas of integrated research and innovation. These three integrated research and innovation areas are in addition to the six already established research-impact fields of industry, built environment, health, natural environment, defence and security, and energy. The HSRC continues to improve on its reputation as a public entity providing excellent social-science research in a range of fields from reducing poverty to improving education, from improving gender relations to fighting HIV and AIDS.

The DST's International Cooperation and Resources Programme receives R119 million to promote relationships with global partners, leverage foreign investment in South African science and technology, afford training opportunities for South African researchers abroad, and enable cooperation that permits South Africa to share in international experience and expertise.

In the 2013/14 financial year, through science diplomacy and smart co-investments, the DST secured R253 million in science, technology and innovation funds from international partners. This included a substantial partnership with the Bill & Melinda Gates Foundation in the health, water and sanitation domains, and a dedicated programme with the European Union harnessing innovation for poverty alleviation.

In the next five years, the DST will prioritise support, through cooperation with international partners, for science, technology and innovation capacity-building in Africa. African Heads of State recently approved an ambitious continental framework, the Science, Technology and Innovation Strategy for Africa. South Africa plans to be at the forefront of implementing this strategy.

The DST will step up its efforts to make South Africa a preferred destination for foreign science, technology and innovation investment. We would like to encourage international companies to locate their research and development facilities to South Africa. General Electric, for example, recently announced a R500 million investment in a customer innovation centre located in Gauteng, which will assist in developing the company's global technology platforms for local market needs, and a further R200 million to support South African small and medium enterprises, notably through technology transfer.

In closing, I would like to express my sincere appreciation to Deputy Minister Magwaza-Msibi, Dr Phil Mjwara, the Director-General of Science and Technology, and the staff of the Department for their hard work and commitment to making a difference in addressing poverty, inequality and unemployment. Thanks also to my staff in the Ministry for their hard work and support.

Likewise, I thank the Portfolio Committee on Science and Technology for all they have done and will do to facilitate the realisation of the goals set for science and technology in the National Development Plan.

We remain committed to taking South Africa forward by using science, technology and innovation for socio-economic growth and transformation.

Issued by: [Department of Science and Technology](#)