Address by the Deputy Minister of Science and Technology, Ms Zanele Kamagwaza-Msibi, on the occasion of the Budget Vote debate, Cape Town

22 Jul 2014

Honourable Chairperson
Minister Pandor
Members of Parliament
Ladies and gentlemen.

I would like to echo Minister Pandor's assertion about the importance of science and technology in realising the goals of the National Development Plan (NDP). The NDP proposes some broad focus areas for the National System of Innovation and its actors, including the use of knowledge and innovative products to compete in internationally trade. Obviously, innovation should also improve existing industries and help new industries to lower the cost of doing business in the private sector.

The department and its entities had a number of successes in the 2013/14 financial year:

- The National Recordal System for Indigenous Knowledge Systems (IKS) was launched in Moruleng in the North West, and the first International Conference on IKS held in Gauteng. Between 2009 and 2010 more than R30 million was invested in supporting 25 applied research projects. The two IKS research chairs supported 12 PhDs, 31 master's degrees and 40 honours degrees. 2013 also saw long overdue international recognition of these achievements, when the prestigious Knowledge Economy Network Forum awarded the Department of Science and Technology (DST) IKS Office its global prize for best practice in developing a national innovation programme.

- Through the Information and Communication Technology for Rural Education and Development project, 700 tablets and mobikits were handed out this year to learners, teachers and district officials in 12 schools. It is anticipated that a further 2 440 tablets will be handed out this year.

- The Wireless Mesh Network initiative was extended to schools in the JT Gaetsewe District Municipality of the Northern Cape.

- Through the South African National Research Network (SANReN), a total of 173 research and educational sites have been connected with high-speed broadband, ranging from a minimum of 1 to a maximum of 10 gigabits per second.

- The Bio-economy Strategy was launched, and its implementation plan will be finalised this year. South Africa is, thus, joining the ranks of leading knowledge economies, which all have dedicated strategies in this economically critical area.

- We also celebrated the 75th anniversary of the discovery of the coelacanth off the coast of South Africa. This major scientific discovery remains a wonderful story of chance, dedication, the geographic advantage of the country, and a great depth of scientific knowledge.

Honourable members, the development of knowledge is at the root of a country's innovation system. As we move South Africa forward towards a knowledge-economy, we should be mindful that research is no longer performed solely within the walls of large institutions or corporations, or national boundaries. Collaboration is a new and important source of competitive advantage. Interactions between diverse actors have increased the possibility of research outcomes that are more relevant to the users of that

knowledge. It is important that our scientists and researchers continue to collaborate with their counterparts all over the world. Science is, after all, an international enterprise.

We need to ensure that science, technology and innovation contribute to socio-economic development in line with the call by the President for the radical transformation of South Africa, addressing the triple challenge of poverty, inequality and unemployment.

To move the country towards a knowledge economy we need to invest massively in research infrastructure and human capital development, transforming science, technology and innovation so that historically disadvantaged communities become active participants in the sector.

Infrastructure for research and development

The presence of the South African Astronomical Observatory (SAAO) in the Karoo town of Sutherland has benefitted the area enormously in terms of both science tourism and education. The observatory supports the local community through the teaching of Maths and Science at secondary school level. A community centre built two years ago is used to teach learners and adults computer literacy.

Global infrastructure like the SAAO, together with the MeerKAT and the Square Kilometre Array (SKA), are also making a meaningful contribution to science tourism.

The SKA SA has established a bursary scheme to bring learners from surrounding towns to Carnarvon to study Maths and Science at school. Twenty-four learners are being supported through this programme.

Linked to astronomy, the DST, in collaboration with the Department of Public Enterprises and the state-owned company, Broadband Infraco, has invested more than R600 million in the acquisition of broadband capacity on the West Africa Cable System. This will support the work of the MeerKAT and the SKA to retain South Africa's well recognised global status in the field of space and astronomy.

In the 2014/15 financial year more than 200 sites across the country will be connected to international research networks hosting over 3 000 research and education institutions all over the world. Currently, there are close to 1 million users on the SANReN network daily. By the end of the medium term expenditure framework (MTEF) period the DST will have invested about R600 million on the acquisition of additional international broadband connectivity. In the MTEF period the DST will establish a National Integrated Cyber infrastructure System to put in place the best operational, management and governance structure and the most sustainable business model.

Our continued investment in the Centre for High Performance Computing (CHPC) is yielding positive results with regard to human capital development in the area of scarce skills. The CHPC has more than 500 users and has twice been listed among the Top 500 super computers in the world. South African students won the International Supercomputing Conference in Germany last year and this year. The CHPC has been accredited as a member of the international SKA Science Data Processing Consortium, demonstrating the centre's footprint in the international community and recognising the country's capability to participate in international projects.

Indigenous Knowledge Systems

The African Union recognises the essential nature of African knowledge systems in the holistic development of the continent, and South Africa actively supports the preservation, protection and development of indigenous knowledge systems (IKS). The country has more than 300 000 traditional health practitioners, and there are approximately 5 000 medicinal plant species on the African continent,

as well as many different minerals, animals, reptiles and insects with potential health or economic benefits. South Africa has the modern scientific innovation capacity to develop African traditional medicines and, with the traditional healing sector estimated to be worth US$4 billion, it is important that government ensures the use of South Africa's biodiversity to address poverty, inequality and unemployment. Both the Technology Innovation Agency and the South African Bureau of Standards are contributing towards the modernisation and commercialisation of African traditional medicines.

The DST is in the process of facilitating commercialisation agreements on nutraceutical candidate products with Nestlé and on cosmeceutical candidates with L'Oréal. Anti-hair-loss and anti-wrinkle products developed are being licensed to two private-sector companies.

More than 300 community members were trained in agro processing, business management and the commercialisation of products through the IKS Bioprospecting and Product Development Platform.

Partnership with the Department of Basic Education

The DST provides support to the Department of Basic Education under a five-year framework (from 2014 to 2019) aimed at promoting public engagement on science, technology and innovation.

The Technology for Rural Education Development (TECH4RED) project in Cofimvaba is aimed at contributing to the improvement of rural education through ICT-led innovation in nutrition, agri-teaching, energy, water, sanitation and e-health, as well as the development of a science centre in Cofimvaba.

TECH4RED is investigating how the application and deployment of new and existing technologies, which include e-textbooks and other electronic resources at schools, can assist to develop a framework that can be replicated and upscaled in other provinces and across the rural education system.

A digital badging system is used to measure and assess the readiness of both individual teachers and schools before they can be issued with the tablets. We have also developed an ICT teacher development model that we hope will assist teachers to integrate ICT efficiently into teaching. About 136 teachers have successfully completed the ICT teacher professional development course.

ICT research, development and innovation

Our Information and Communications Technology (ICT) portfolio has continued to grow since ICT was identified in 2002 as one of the key technology missions of the National Research and Development Strategy. Last year Cabinet approved the 10 year ICT Research, Development and Implementation Roadmap as a national plan for implementing the ICT RDI Strategy which, over the past six years, has received funding of R85 million per annum. The strategy has contributed to advancing human capital development, ICT for Earth observation, human language technology, video coding and information security. A total of 216 undergraduate and postgraduate students were supported by the ICT RDI human capital development programme between 2006 and 2013.

The ICT RDI Roadmap is aimed at increasing public and private investment in ICT research, development and innovation by providing a mechanism to forecast technology developments in targeted areas and identify critical areas for development if South Africa's socio-economic objectives are to be met, in education and health, for example.

We will need R9 billion to implement the roadmap, and will have to develop a financing strategy with input from the Department, its entities, National Treasury, other government departments and the private sector. Concerted efforts by the DST and its ICT RDI implementing agency, the CSIR Meraka

Institute, have succeeded in sourcing and leveraging additional funding of about R258 million for ICT RDI activities.

This includes:

- R15 million from the Development Bank of South Africa Green Fund for the development of an ICT Smart and Green Platform aimed at demonstrating how ICT can support green economy goals for the country;
- three-year funding of R61,1 million from the DST and the Department of Rural Development and Land Reform;
- R62 million over three years from the National Treasury's Economic Competitiveness Support Package for the ICT Industry Innovation Partnership Fund;
- R120 million from European Union General Budget Support funding for an ICT innovation programme.

We are also developing a rich portfolio of ICT research and innovation partnerships with the world's leading multinational companies, including the likes of Cisco, IBM, Microsoft and Nokia. We are determined for South Africa to become a preferred destination for global ICT research and innovation investments.

Research, water, energy and health in education

In support of the Department of Rural Development and Land Reform's Comprehensive Rural Development Programme, the DST will in 2014/15 pilot innovative alternative service delivery options for water resource management and waste water treatment. We intend to ensure that the current and future energy needs of schools are quantified, and that appropriate energy technology solutions are developed to meet the identified needs.

In this regard, we have finalised a feasibility study on supplying hydrogen in Cofimvaba. Hydrogen storage facilities are under construction, and fuel cells donated by Anglo Platinum have been tested. The cells are now ready for deployment to Cofimvaba. The Fort Hare, Stellenbosch and Nelson Mandela Metropolitan Universities are developing renewable energy systems for schools.

Through the e-health intervention, mobile devices with specific mobile applications are used to improve access to school healthcare and health education on the basis of the schools' needs. Television screens have been installed at clinics with appropriate health education content, and a mobile application aligned to the Integrated School Health Policy has been developed to capture each learner's health record electronically.

Support for government in decision-making

Through the Council for Scientific and Industrial Research (CSIR's) Meraka Institute, we assisted the government to develop the National Health Normative Standards Framework for Interoperability in e-Health. This framework was approved by the Minister of Health in April 2014 in order to optimise healthcare delivery, research and education.

The DST is leading the development of the cybersecurity research, development and innovation agenda and the enhancement of the cybersecurity at universities, science councils and industry. The department

will also coordinate the country's collaboration with international partners on matters of research, development and high-end skilling on cybersecurity.

Later this year, in August, the department will launch the Water Technologies Demonstration Programme. This is part of the broader Water Research, Development and Innovation Roadmap that the DST is developing in partnership with the Water Research Commission. The DST and the Water Research Commission are also supporting South Africa's participation in the water cluster of the European Union (EU's) renowned industrial research programme, Eureka. A recent success includes Eureka's approval of a large-scale project looking to develop solutions for wastewater problems in the mining industry, which includes the participation of our national science council, Mintek, and Anglo Coal. Effectively dealing with wastewater is a major environmental and societal concern for our mining industry.

We have a partnership with the Bill & Melinda Gates Foundation in the area of sanitation. This will enable the department to access innovative technologies that have been subjected to a rigorous selection process by the Bill & Melinda Gates Foundation, and to pilot them in 23 rural district municipalities in Cofimvaba which have been identified by government as in critical need of assistance with sanitation. The projects will be piloted during the 2014/15 financial year with R10,7 million from the Bill & Melinda Gates Foundation, and R30 million from the DST.

In comparison to other developing countries, anecdotal evidence indicates that the department's efforts to help address poverty, unemployment and inequality are considerable. As a number of developing countries in Asia and Latin America are doing, the DST will be developing a strategy and roadmap for ensuring that innovation plays its role in achieving inclusive development. This strategy is aligned to the 1996 White Paper on Science and Technology and the Poverty Reduction Mission of the 2002 National Research and Development Strategy, as well as the National Development Plan.

Youth into Science

In pursuit of increasing public engagement on science, technology and innovation, a science and education centre will be built in Cofimvaba at a cost R30 million to encourage an appreciation for science and to offer teacher training in the area. A mobile science laboratory will also be linked to the science centre to reach other nearby rural areas. The mobile laboratory is funded by the DST and the Sasol Inzalo Foundation.

We have also appointed the Human Sciences Research Council to assess the effectiveness and success of the crowding-in of technologies approach in improving learning and teaching in a rural context as piloted under the Tech4RED initiative, and to facilitate real-time feedback from the project into project plans and implementation.

Bioeconomy

This year we will finalise the implementation plan of the Bio-economy Strategy which recognises the importance of research, development and technology innovation in three main sectors, namely, health, agriculture (including forestry and fisheries), and industry/environment. In order to realise this, an investment of R1,5 billion for the first year, growing to R5 billion in five years would be required.

Our science system continues to be world class. A South African-led initiative to sequence the Eucalyptus genome resulted in an article in Nature (the gold standard for science publications) last month, and the local forestry industry is already using the markers developed in the DST-industry partnership.

Our country continues to be a key player in the Human Heredity and Health in Africa initiative. In this regard, we have secured funding of $74 million from the US National Institutes of Health and the Wellcome Trust for a variety of research project on diseases of local relevance. It is critical that the growing momentum in bio-innovation that underpins the Bio-economy Strategy be better resourced to create a vibrant bioeconomy that can seize opportunities to create wealth and employment for South Africa, as well as treatments to address our disease burden.

Conclusion

Honourable Members, I have been working with Minister Pandor for a few weeks only, but I already appreciate her clarity of purpose, drive and passion for success. I am also pleased to be partnering with Director-General Dr Phil Mjwara, and the hard-working DST team.

I look forward to the critical oversight of the Portfolio Committee on Science and Technology under the leadership of the Honourable Dr Bevan Goqwana.

Thank you.

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