

MEDIA RELEASE

Achieving NDP 2030 targets: Science bodies discuss skills needed by SA's science, technology and innovation (SETI) institutions

18 September 2013

Representatives of South Africa's science councils and statutory bodies gathered in Pretoria on Thursday, 12 September to discuss the skills needed in the country's SETI institutions, within the context of the National Development Plan (NDP).

A number of key actions required to address SA's SETI skills needs emerged from the day's discussions. These include the following:

- ensure the relevance of academic research and technological development to the economic growth path and the NDP
- establish partnerships to draw together the capabilities, interests and resources of different stakeholders
- develop a framework to coordinate the production of knowledge and guide the investment of public funds to support such partnerships
- establish a proper academic production pipeline
- reduce attrition throughout the education pipeline (grade 1 to PhD)

Hosted by the Science Councils and Statutory Bodies sector* of the National Science and Technology Forum (NSTF), the meeting kicked off with a keynote address by Prof Mike Muller in his capacity as a member of the National Planning Commission. This was followed by panel discussions on the education and training policy landscape, and skills needs for a number of sectors (agriculture, water, environment, energy, mining, manufacturing, technology, and innovation in general).

Muller's address focused on Chapter 9 of the NDP, which deals with ways to improve education, training and innovation. He cited several NDP proposals to strengthen the NSRI, including the establishment of a common overarching framework to address pressing challenges; nurturing and coordinating research capacity in higher education and linking it to postgraduate studies; increasing support for postgraduate study at universities; relaxing immigration requirements for highly skilled individuals; and revitalising science and mathematics by increasing the number of school leavers eligible to study science and mathematics-based subjects at university.

Muller emphasised that innovation is not a linear process. "It is only successful when effective partnerships are in place," he said. "We should be realistic about the extent to which SA can play a leading role and find appropriate niches by building partnerships with SA business as well as external players in larger sectors, such as the areas of titanium fabrication, or platinum for fuel cell components. We must also ensure that collaboration addresses South African challenges, not external priorities."

In conclusion, Muller identified several critical approaches to implementation: integrate the NDP into government plans for 2013, and make existing government work consistent with the Plan; identify areas of responsibility and accountability; prioritise critical steps to unlock implementation; sustain broad public support and use social dialogue to construct cross-sectoral partnerships and set benchmarks.

Panel discussion on education, training and policy landscape

Simon Tankard of the Human Resource Development Council pointed out that a number of measures were required to facilitate a greater understanding within the higher education sector of the SET skills required. He said a broad range of role players have to be engaged, including S&T councils and organisations; chambers of business, commerce and member organisations; professional organisations; and the SMME sector (entrepreneurs).

Ansilla Nyar of Higher Education South Africa identified some of the key challenges in meeting skills needs, from the perspective of higher education. These include the fact that higher education constitutes a highly dynamic sector confronted by multiple challenges (access, equity, efficiency, quality and relevance), and variation amongst universities in making linkages with other stakeholders (such as science councils).

Ahmed Essop, CEO of the Council on Higher Education, pointed out that SA has not reached the 20% participation target for higher education, as determined in policy documents - the participation rate has remained in the 17%-range, despite an increase in access. Coupled with a high attrition rate (55% of students leave higher education without gaining a qualification), this means that we are not producing the knowledge skills we as a society require. In addition, he said that the question of how to attract students into postgraduate careers required urgent attention.

The high cost of postgraduate studies at SA universities, especially for people who have to earn a living and support families at the same time, was cited by Thomas auf der Heyde of the Department of Science and Technology as one of the obstacles in attracting more students to postgraduate studies. He indicated that the department was commissioning a study to find answers to this problem and to facilitate an increase in funding for larger bursaries.

Auf der Heyde also said that the productivity and impact of science councils needed to improve; aspects mentioned in this regard include the appropriate use of skills (individuals with PhDs do not necessarily have strong management skills), and the nature of staff development programmes at science councils.

Dr Faroon Goolam of the Engineering Council of South Africa (ECSA) said that the Engineering Skills Summit held in October 2012 identified the following areas in need of attention: schooling, student selection, student support services, curriculum, teaching and learning, staffing and funding. He indicated that ECSA and the Department of Higher Education and Training had established a Joint Engineering and Education Working Group which had already defined its terms of reference, and would meet again on 18 September 2013.

A number of programmes and funding mechanisms used by the National Research Foundation to develop research capacity in science councils were identified and explained by Dr Linda Mtwisha. These include the Professional Research Development Programme, which enables doctoral candidates and recently qualified doctoral graduates to gain further research experience in science councils or national facilities; the DST/NRF Internship Programme, the Thuthuka programme and the SA Research Chair Initiative. The latter aims to strengthen research and innovation capacity at universities to produce high-quality postgraduate students, research and innovation outputs responding to national priorities and strategies.

Panel discussion on skills needs for the agriculture, water and environment sector

Makgomo Umlaw of the Agricultural Research Council emphasised the necessity of partnerships and collaborations with private sector and higher educational institutions in order to ensure the growth of the agricultural sector and make it attractive to young graduates.

Thomas Mathiba of the Department of Environmental Affairs (DEA) pointed out that the environment was a new area for skills development in South Africa; despite being a significant employment sector, it currently has almost no formal system of skills planning. However, he said that the DEA had initiated discussions with all the SETAs in order to facilitate integration of environmental issues into their skills plans and is also engaging with faculties of education at universities to ensure inclusion of environmental issues in their curricula.

Dr Sibusiso Manzini of the SA National Biodiversity Institute introduced delegates to GreenMatter, a public-private initiative that partners with South Africa's biodiversity sector in developing relevant and quality skills for the country's Green Economy, and to support the

sector's transformation agenda.

Setsipane Mokodukwe of the Water Research Commission indicated that the WRC, in collaboration with the Department of Water Affairs, had commissioned a water skills audit (which should be completed by the end of 2013) to identify gaps and progress since 2005.

Panel discussion on skills needs for energy, mining, manufacturing, technology and innovation in general

A range of role players participated in this discussion, including the SA Nuclear Energy Corporation, the Council for Geoscience (CGS), Wits Business School, the Academy of Science of South Africa and the SA Bureau of Standards (SABS) Design Institute.

Dr Marthinus Cloete of the CGS identified the council's key human capital challenges as the departure of highly qualified and experienced "baby boomers" due to retire, and the fact that the rate at which highly qualified and experienced geoscientists are produced falls short of the demand in South Africa. He also pointed out that the geoscience skills requirements of the CGS (e.g. mapping geoscientists) tend to differ from those of the traditional mining industry geoscientists; the latter seems to be the primary focus of local university training programmes.

Items identified for follow-up after the symposium include:

- a comprehensive skills audit for SETI institutions
- establish qualification levels at science councils (if the target is for 50-60% of staff to have PhDs, what qualifications should the rest of the staff have - should they all have Masters degrees? What about skilled technologists?)
- promote continuing education, both for academic and non-academic studies
- monitor developments regarding relaxation of immigration requirements of people with scarce skills
- investigate how to improve the productivity and impact of the science councils
- debate the definition of innovation, with the aim to reach agreement
- identify which graduate attributes are urgently needed (e.g. the ability to form mental models, solve problems and understand organisational mechanisms)
- investigate solution design for skills development programmes, critical rethinking and research
- investigate ways to promote and transfer design thinking and systems thinking, particularly in relation to the public service.

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[Click here](#) to download some of the presentations referred to in the media release. Minutes and proceedings of the meeting will also be made available on the NSTF website shortly.