

MINISTER OF HIGHER EDUCATION, SCIENCE AND INNOVATION, DR BLADE NZIMANDE ON THE OCCASION OF THE LAUNCH OF THE 2023 STI INDICATORS REPORT HELD AT SHERATON HOTEL - PRETORIA

10 August 2023

Programme Director
DSI Director General, Dr Phil Mjwara;
All Deputy Directors General present;
NACI Chairperson, Mr. Tilson Manyoni;
Head of NACI, Dr Mlungisi Cele;
CEOs of Public Entities;
Civil Society, Higher Education and Business Leaders;
Distinguished guests;
Members of the media

Good Morning

INTRODUCTION

The 2019 White Paper on Science, Technology and Innovation (STI) empowers the National Advisory Council on Innovation (NACI) to monitor and evaluate the national system of innovation (NSI).

NACI is a leading advisory body to government on science, technology and innovation, in a well-coordinated, responsive and functioning national system of innovation.

They provide evidence-based advice to me as the Minister of Higher Education, Science and Innovation. I will then have to take this advice to Cabinet.

Regarding our report today, under NACI's Monitoring and Evaluation Framework, the Centre for STI Indicators was commissioned to produce the 2023 STI Indicators Report.

Today we are gathered here for me to officially I will present the report to the public. As much as the report will illustrate some challenges in our STI landscape, a lot of positive developments has taken place and through our Decadal Plan we will address a number of these challenges and go beyond by building a resilient STI system.

I will therefore provide the highlights of the report, and the Head of NACI, Dr Cele will make a detailed presentation.

HIGHLIGHTS OF THE REPORT

On STI human resources and expansion of research capacity

The proportion of staff over 60 years of age (both men and women) increased from 7,3% in 2011 to 10,4% in 2020.

This trend implies that public universities will lose about 10% of permanent staff with doctoral qualifications due to retirement within the next five years. Furthermore, the proportion of staff aged 20 to 29 declined from 7,9% in 2011 to 5,8% in 2020.

Although there is an increase in the proportion of staff aged 30 to 39, this increase is lower than that of staff aged over 60. Therefore, there is a need to intensify support to young academic staff through instruments such as the New Generation of Academics Programme.

As a result of the Department of Higher Education and Training's implementation of various programmes aimed at developing future generations of academics and building staff capacity, the gender gap among academic staff is gradually closing. The proportions of male and female researchers are approaching parity.

The percentage of staff in science, technology, engineering and mathematics (STEM) fields has remained consistent over time.

In 2010, the proportion of STEM staff among all staff was 51,5%, which rose slightly to 51,9% in 2021. This finding is, on reflection, not surprising.

South African academics, once appointed on a permanent basis, cannot easily be replaced. Given that the typical academic career is around 40 years, universities have often been compared to large tankers which change course slowly and with difficulty.

For the percentage of staff in the STEM fields to increase significantly in relation to non-STEM (social sciences, humanities, education, economic and management sciences) staff, it would require many universities to change their organisational design, creating more medical schools, engineering faculties and larger science faculties.

The envisaged establishment of the new University of Science and Technology in Ekurhuleni, Johannesburg, is an example of the type of intervention that is required.

The goal of increasing the numbers of graduates in science, engineering and technology (SET) has been stated and repeated in multiple national policy documents since 1994.

The 2019 White Paper on STI states that the country does not produce sufficient SET skills for the economy. Despite various initiatives over the years to increase the output of SET graduates, the percentage of SET graduates as a proportion of all graduates has remained unchanged over the past 12 years.

Since 2015, the proportion of female doctoral graduates in the STEM fields has surpassed those of male graduates. There has also been an increase in the production of black doctoral graduates in STEM fields.

Another positive development in the same domain has been the increase in the number of black doctoral graduates in STEM fields. From constituting about one-third of all doctoral graduates in 2010, the share of black doctoral students in STEM fields increased to 44% in 2020.

South African scientists have increased their research collaborations with the USA, Germany, UK, and Australia; all the other member states of BRICS; and a few other countries (Canada and several European countries).

On STI investments

In South Africa, gross expenditure on research and development as a percentage of GDP (GERD/GDP ratio) decreased from 0,76% in 2017/18 to 0,61% in 2020/21.

Business-sector expenditure on R&D has been on a declining trend over the decade and declined further in 2020/21. The business sector's capacity to attract foreign funding is declining – overall and as a share of foreign funding.

On STI outputs

South Africa's scientific publication output has seen a remarkable rise over the past two decades. The number of publications has increased from 3 693 in 2000 to 27 052 in 2021. However, despite this sustained increase in publications, the country's world share seems to have peaked at around 1% over the past five years.

There has been a significant increase in the number of female authors contributing to university publications, rising from 31% in 2005 to nearly 42% in 2021. However, in the field of biotechnology, South Africa's world share of publications peaked in 2019, but has experienced a decline in 2020 and again in 2021.

On Employment of researchers

Most South African researchers are based in the higher education sector (86,3% in 2020/21) and this trend is ongoing. On the contrary, the business sector's share of total researchers in the country declined from 15,2% in 2011/12 to 7,3% in 2020/21.

Science councils have been on a downward spiral that began in 2017/18, with a decrease from 2 189 (3,9%) researchers in 2016/17 to 1 774 (2,9%) researchers in 2020/21.

Considering this downward spiral, stakeholder discussion is urgently needed to find solutions.

This report reveals that our universities have to train more staff in the STEM fields.

However we know that this requires a whole organisational design at many of our universities, creating more medical schools, engineering faculties and larger science faculties.

This is the reason that I am delighted that we will be established a new Science and Innovation University in Ekurhuleni, here in Gauteng – which is the only Metro in the country that does not have a university.

This university will play a leading role in enhancing the growth of critical skills in the STEM fields needed to create jobs, boost the economy and improve the lives of citizens.

As you may know, South Africa, has to respond to a number of challenges which include the after effect of the global COVID-19 pandemic, the economic crisis which is manifested by persistent high levels of unemployment, poverty and inequality that affect the working-class, while the social reproduction crisis is manifested by the associated inability of the affected working-class households to support their lives.

One manifestation of the multiple crises of social reproduction is that of gender-based violence and the subordinate position of women in society generally.

The interrelated crises of unemployment, poverty, inequality, and social reproduction also manifest in high incidents of criminality and different forms of violence afflicting many of our communities.

A significant percentage of the population, approximately 20%, were counted as "extremely poor" in 2021. Other types of poverty remained high as well, with lower-bound poverty at 29% and upper-bound poverty at 42%.

In this light, embedding STI with the country's policy agenda will require developing solutions to these socio-economic challenges. I can assure you today that through our new Decadal, or ten-year Plan for Science, Technology and Innovation we will respond to these challenges.

Although prepared by my Department, the Decadal Plan is not only a plan for the Department of Science and Innovation, or for Government alone, but for all of South Africa.

Through a number of policy, governance and funding interventions, the Plan seeks to enhance our national consensus, coordination and cooperation, including through enhanced Public-Private Partnerships, to put science, technology and innovation at the heart of South Africa's growth and development agenda.

On the issue of forging Public-Private Partnerships, tonight I will be hosting a dinner at Houghton Hotel in Johannesburg with industry leaders to discuss investment opportunities in South Africa's STI system.

The gathering emanates from the 2019 White Paper on Science, Technology and Innovation (STI) which introduced a focus on increasing the investment by the private sector in South African Research and Development (R&D). Furthermore, our South Africa's Higher Education, Science, Technology and Innovation Institutional Landscape (HESTIIL) Report recommended measures to revitalize private sector investment in R&D, in particular to "bring the state-owned enterprises back into R&D".

This dinner tonight is therefore one of our most important attempts to ensure that we work with the private sector to grow South Africa's investment in the STI.

In conclusion, let me take this time to thank all of you for attending this launch. It is my hope and desire that all the stakeholders read the findings of this report and its implication to our sector as a whole.

Thank you very much.