THE MINISTER OF HIGHER EDUCATION, SCIENCE AND INNOVATION, DR BLADE NZIMANDE ADDRESS ON THE OCCASION OF THE NATIONAL ADVISORY COUNCIL ON INNOVATION STI INAUGURAL POLICY COLLOQUIUM HELD AT FIRE AND ICE HOTEL - MENLYN PRETORIA

8 September 2022

Programme Director: Acting NACI CEO, Dr Mlungisi Cele
Department of Science and Innovation, Director General, Dr Phil Mjwara;
Deputy Director Generals present;
My advisors;
NACI Chairperson, Dr Shadrack Moephuli;
Chairpersons and CEOs of our entities;
NSI fraternity;
Invited guests;
Members of the media;
Ladies and gentlemen

I am delighted to be joining you this evening in the National Advisory Council on Innovation (NACI) STI policy colloquium.

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

NACI is established to provide evidence-based advice to me as the Minister of Higher Education, Science and Innovation and, our Cabinet broadly on science, technology and innovation matters, through the research expertise and stakeholders engagement.

Our policy colloquium is aimed at all stakeholders within the NSI to engagement on the role that STI should or must play to make the lives of our people better by creating an inclusive society and economy.

I therefore thank the NACI Board, the management and my Department of Science and Innovation for organising this ground-breaking NACI inaugural policy colloquium.

Let me also take this opportunity to thank the chairperson all the Board Member for having dedicated their most valuable time to guide the NACI work, particularly given the fact that NACI has not been having a substantive CEO for some time. I extend my gratitude to you all and wish you in your other engagement as the term of this Board comes to an end.

Ladies and gentlemen

September marks Public Service Month (PSM) in South Africa, which encompass Heritage Day, Tourism Month and the Police – Commemoration Day to remember the fallen heroes and heroines.

This month serves as a reminder of what it means to serve communities and to also look at the impact the government has, especially around issues of service delivery.

For us in the National System of Innovation we need to interrogate ourselves on what ought to be our role in making the lives of our people better, particularly post the COVID 19 pandemic.

We need to interrogate the role that STI can play in the creation and development of a " circular economy", as part of a just transition to support sustainable living.

I believe that together in this policy colloquium we will reflect on our progress in implementing our STI policies and at the end of the colloquium bringing us closer to a common understanding of the work that confront us all.

During the February 2022 State of the Nation Address (SoNA), President Cyril Ramaphosa emphasised that "We are working together to revitalise our economy and end the inequality and injustice that impedes our progress".

The President highlighted the need for a new social compact between government, business, social partners and communities to grow the economy, while reinforcing critical areas of focus, including:

(a) overcoming the COVID-19 pandemic;
(b) a massive rollout of infrastructure;
(c) a substantial increase in local production;
(d) an employment stimulus to create jobs and support livelihoods;
(e) rapid expansion of the country's energy generation capacity.

Let me also indicate that to further enhance coherence of the NSI at a system level, we have established a standing ministerial-level STI Structure, which I am chairing as the Minister of Science and Technology.

The Ministerial STI Structure will comprise the relevant STI-intensive departments, the chairpersons of the government clusters, National Treasury and the Department of Planning, Monitoring and Evaluation (DPME).

The committee will focus on setting a high-level public agenda for the NSI, approving decadal plans on innovation for South Africa, committing public resources to research and innovation, and reviewing reports on the performance of the NSI over three-year cycles. Furthermore, the Ministerial STI Structure will lead government in ensuring that the environment for innovation is optimal.

Under the guidance of the Ministerial STI Structure, a whole-of-society innovation approach is promoted to ensure that the various policies that affect innovation are aligned – establishing, in effect, a South African innovation compact.

As a Department, we will be working with the Presidency and National Treasury to facilitate the integration of the STI agenda and plans into government planning, under the auspices of the Ministerial STI Structure. This will include the coordination of STI budgets.

To ensure that STI enjoys the required support and stature across government and society, an annual STI Plenary will be convened by the Presidency. The STI Plenary will include business, government, academia and civil society.

The STI Plenary will serve as a collaborative platform. The Ministerial STI Structure will present its high-level STI plans and broad investment strategy for South Africa, as well as report on progress with priority national STI initiatives, for discussion with the NSI partners brought together by the Plenary. Importantly, business, labour and civil society stakeholders will also present their issues to the Plenary.

The NSI partners will use the STI Plenary to collaboratively reflect on progress with STI initiatives, strategise to address challenges, make recommendations on actions required, and jointly commit resources for the recommended initiatives.

As we may know, science knows no borders. We will continue to strengthen our international research and cooperation efforts, particularly on the implementation of the BRICS framework research activities, the STI initiatives targeting the objectives of the SADC Regional Indicative Strategic Development Plan (RISDP) and the initiatives targeting the objectives of Agenda 2063.

An important matter that I would urge that you reflect upon is that of the absolute necessity to identify and mobilise resources to fund research development and innovation in Africa in line with the priorities and challenges facing our continent. We cannot be able to advance most of our research, science, technology and innovation goals unless we have our own resources to fund research and be less dependent on donor-driven funding.

Ladies and gentlemen

White Paper on Science, Technology and Innovation

The year 2019 ushered in a new era for the Department, with the approval by Cabinet of the 2019 White Paper on STI.

This document is now the principal policy guiding the South Africa's National System of Innovation (NSI) and commits the country to furthering the role of Science Technology and Innovation (STI) in economic and social development, emphasising the core themes of inclusivity, transformation and partnerships for an innovative society and economy.

It is being implemented through the Decadal Plan for 2021-2031, which is our roadmap for driving STI policy and programmes over the next 10 years, with specific areas of focus and development.

The Decadal Plan is aligned to the National Development Plan and informed by the South Africa Foresight Exercise for Science, Technology and Innovation 2030 (SAForSTI), carried out by the National Advisory Council on Innovation (NACI).

As you might know, Cabinet approved the Decadal Plan in March 2021 for implementation. In the post Cabinet meeting statement, Cabinet pointed out that the Decadal Plan serves as a government-wide master plan, fostering interdepartmental collaboration primarily with the Departments of Agriculture, Land Reform and Rural Development; Mineral Resources and Energy; Health; and Trade, Industry and Competition.

I must indicate that the work of the DSI responds to the needs of our country, and that #itspossible ? to create a sustainable and prosperous South Africa through the implementation of the Decadal Plan.

Economic Recovery

Ladies and gentlemen

Our Departmental STI initiatives cut across the three phases of the South African Economic Reconstruction and Recovery Plan (ERRP), which includes the following:

- Engage and Preserve - which includes a comprehensive health response to save lives and curb the spread of the pandemic;

- Recovery and Reform - which includes interventions to restore the economy while controlling the health risks, and

- Reconstruct and Transform - which entails building a sustainable, resilient and inclusive economy.

Our Department is focusing on the role of science and innovation in the ERRP, specifically on the innovation response to the Covid-19 pandemic and on leveraging long-term investment in South African RDI over the years to support economic reconstruction and recovery in four areas of:

- the revitalisation of existing sectors/industries;
- the exploitation of new sources of economic growth;
- the building of a capable state, and support for broad-based education and skills development.

Key among these is the Department's contribution to ensuring energy security.

For example, in February this year, I launched the Hydrogen Society Roadmap for South Africa, which guide the country in creating new growth sectors while transitioning to a carbon-neutral economy.

At the same time, work continues modernising existing sectors like mining through support for research and development (R&D), both to ensure a safer working environment for miners and to increase the lifespan of mining in the country.

The implementation of high-tech industrialisation processes using advanced manufacturing to increase economic competitiveness also remains our key priority.

Ladies and gentlemen

Let me now focus my attention on some of our interventions in the STI to create an enabling environment for inclusive economy growth, social development, transformation and partnerships.

Agriculture and food security

Through the implementation of the Agricultural Bio-economy Innovation Partnership Programme (ABIPP) our Department is intensifying its support for agricultural research and the introduction of smart agriculture technologies in a bid to ensure food security and modernise agriculture.

With animal disease outbreaks impacting heavily on economic growth, we have also increased our support for R&D in veterinary research to tackle foot and mouth disease, among others.

We also made significant progress in Agro-processing and value chain development under the Agricultural Bio-economy Innovation Partnership Programme (ABIPP).

Modernising mining

The joint, public-private RDI partnership in mining (between the Minerals Council South Africa and the DSI/DTIC) continues to deliver technological solutions that help to increase the competitiveness of mining in South Africa, especially deep-level mining.

The DSI also provides support to the Mining Equipment Manufacturers of South Africa, which aims to strengthen the competitiveness and product range of the local mining equipment manufacturers.

Modernizing manufacturing

As a department we continue to support initiatives to modernise manufacturing, particularly the development of additive manufacturing (3D printing) technologies. Our intention is to make sure that these initiatives mature and are incorporated into manufacturing value chain in South Africa.

One of the spin-offs of the DSI investment in the Aeroswift programme resulted in the establishment of a new company (Aditiv Solutions), which has manufactured the HYRAX metal additive manufacturing machine.

The Aeroswift project has since produced three titanium parts, namely a pilot's throttle lever and a condition lever grip for the South African developed AHRLAC aircraft and a fuel tank pylon bracket for a commercial aircraft. AHRLAC is a South African light reconnaissance and counter-insurgency aircraft.

Another spin-off is the establishment, with DSI funding, of the MedAdd project, which has brought together small businesses and the Central University of Technology's Centre for Rapid Prototyping and Manufacturing to manufacture medical devices.

As a Department, we will continue to optimise the investment into materials development through an increased emphasis on the industrialisation of mature technologies and alignment to the Decadal Plan.

Heath innovation (Post COVID-19 Recovery)

While COVID-19 persists, our government managed to contain the pandemic through its successful vaccination campaign.

As a country, we made tremendous progress in developing our vaccine manufacturing capability, diagnostics and surveillance.

Our efforts were supplemented in 2021, when the World Health Organization (WHO) announced that the WHO and its COVAX partners were working with a South African consortium comprising Afrigen Biologics and Vaccines, a network of universities, the South African Medical Research Council (SAMRC) and the Africa Centres for Disease Control and Prevention to establish the first COVID-19 mRNA vaccine technology transfer hub for the continent.

To reduce South Africa's dependence on imports, the DSI, the South African Medical Research Council (SAMRC) and the Technology Innovation Agency (TIA) led an initiative to respond to the local and continental demand for testing by setting up a fund to develop COVID-19 diagnostic tools.

The initiative resulted in the development of two diagnostic tests, one by Medical Diagnostech, which became the first test manufactured in Africa to receive approval from the South African Health Products Regulatory Authority (SAHPRA).

A second partnership, between the CSIR and CapeBio, resulted in the successful production of a polymerase chain reaction (PCR) COVID-19 diagnostic test kit approved by SAHPRA.

Being able to produce these test kits locally remains of strategic importance, as it will not only increase South Africa's self-sufficiency in a time of high demand, but also contribute to reducing the trade imbalance with respect to medical devices.

Innovation to support a capable State: District Development Model, women and youth empowerment

Ladies and gentlemen

As a Department, we have adopted the District Development Model (DDM) as a platform to enable innovation in districts and to deploy innovation and technology solutions to our district and metropolitan municipalities.

We continue to prioritise women and youth and we have mainstreamed these groups in all our economic and social development initiatives.

For example, to ensure capacity building and economic opportunities, young people from TVET colleges received training as part of the projects under the Hydrogen Society Roadmap that was launched earlier this year.

Work to empower the youth and women also continues through the Grassroots Innovation Programme and Living Labs, which support local innovation across various provinces.

Flagship initiatives like National Science Week, which continues to attract thousands of learners and members of the public to workshops and science shows at schools, universities and science centres countrywide, are also women and youth-centric.

This includes the South African Women in Science Awards (SAWiSA), which celebrates the best of women in science, technology and innovation in the country.

Through the Innovation for Service Delivery Programme (ISDP), funded in partnership with the European Union and National Treasury, the DSI continues to pilot technologies and innovations to improve the delivery of basic services in municipalities, against the backdrop of the District Development Model (DDM).

The outcomes of the ISDP is to create an enabling municipal policy environment that can facilitate the diffusion of technologies to municipalities in the context of the DDM.

The initiative will support the demonstration and adoption of technology solutions for improving access to quality basic services such as water, waste management, sanitation, and green and renewable energy solutions.

We will also ensure that a project using ICT platforms for electronic participation in policy processes by the youth is piloted in five municipalities.

In partnership with the South African Local Government Association, we have expanded the number of municipalities participating in the Municipal Innovation Maturity Index (MIMI).

This digitised tool provides critical information on the innovation capabilities and readiness of local government to adopt innovation and technology.

This will include developing training courses in partnership with universities on how municipal officials should manage and implement innovation to improve services.

Climate change responsiveness and new sources of growth

Ladies and gentlemen

Research and Development (R&D) activities in urban and spatial planning by the Department's entities, such as the CSIR, SANSA and universities are critical as the country plans its future human settlements.

As a department, we continue to invest significantly in R&D that builds the adaptive capacity and resilience of key sectors to climate change impacts, and mitigates the risks to society, as part of the Department's contribution to a just transition in South Africa.

This is done through the implementation of the DSI-led Global Change Research Plan for South Africa, and associated programmes and interventions like the Alliance for Collaboration on Climate and Earth Systems Science (ACCESS), the Southern Ocean Carbon-Climate Observatory (SOCCO), the South African Environmental Observation Network (SAEON), and the Foundational Biodiversity Information Programme (FBIP).

The Risk and Vulnerability Science Centres (RVSCs) continue to play a crucial role in building the capabilities of rural-based universities to engage effectively in global change research to identify and profile local environmental risks and vulnerabilities.

Hydrogen: Platinum Valley Project

As part of the first phase of the Platinum Valley initiative, a feasibility study on the Hydrogen Valley was launched in partnership with Anglo American Platinum, Bambili Energy and ENGIE in October 2021.

The Hydrogen Valley Corridor will cover three hubs with a high concentration of hydrogen demand and access to green hydrogen, one in Johannesburg Hub, one in Mogalakwena/Limpopo and one in Durban/Richards Bay.

The study identified nine catalytic projects across the mobility, industrial and buildings sectors to kick-start the hydrogen economy. These projects will cost approximately $1,2 billion to implement.

In terms of socio-economic benefits for South Africans, the implementation of the South African Hydrogen Valley corridor could create 14 000 to 30 000 direct and indirect jobs per year by 2030, and by 2050, potentially contribute $3,9-$8,8 billion to GDP (direct and indirect contributions).

In terms of platinum contribution, the study has projected a contribution of up to $70 million billion? of the platinum industry to South Africa's GDP? by 2030.

To facilitate the implementation of the Platinum Valley initiative, as a Department we signed a memorandum of understanding with Sasol, the Gauteng Department of Economic Development and the Central Energy Fund, aimed at promoting potential investments and scaling up the nine catalytic projects identified and embedding transformation in the hydrogen economy landscape.

We have also established strategic partnerships that will promote the manufacturing of locally developed intellectual property for licensing? sale to local and international markets for the benefit of South Africa.

To ensure that our hydrogen work is supported by all our government departments, we have submitted an application to register the Hydrogen Valley as a key programme for South Africa under the Strategic Integrated Projects (SIP).

CoalCO2-X Initiative

Given the abundance of coal in South Africa and the high emissions resulting from its extensive use in energy generation, a just transition to a green economy is a priority, with coal progressively replaced by cleaner sources of energy.

We have initiated the CoalCO2-X project which aims to develop technologies to reduce emissions from coal-fired boilers in the cement, energy, steel, and paper and pulp industries.

A combination of locally developed and international technologies will be used to capture and convert flue gas components (carbon dioxide, sulphur oxides and nitrogen oxides) into commercial products like fertiliser, green ammonia and sulphuric acid, combining the flue gas components with green hydrogen.

This project will assist South African industries to maintain the market share of their products and reduce the impact of carbon border tax mechanisms being proposed by the European Union.

The successful implementation of the CoalCO2-X programme could allow for the continued use of coal through reduced negative impact on the environment, while using existing assets to create new sources of growth and employment in coal mining towns.

To date, as the DSI, we have invested R50 million towards the project, which allowed local small, medium and micro-enterprises (SMMEs) to put in place partnerships to demonstrate the flue gas conversion technology at the PPC cement plant during in the current financial year.

Research, development and innovation for the circular economy

Chairperson

The DSI will be developing a roadmap for science, technology and innovation (STI) for a circular economy in the coming year in response to the White Paper on STI.

The roadmap will complement the work being done by the Department of Forestry, Fisheries and the Environment (DFFE) in stimulating technological transformation of the waste economy and by the Department of Trade, Industry and Competition (DTIC) in integrating circular principles into the sector masterplans.

The roadmap will enable a shift towards a circular economy characterised by eco-innovation, a low-carbon economy, resource efficiency, the bioeconomy and environmental technology.

Amongst other research, development and innovation for the circular economy, we have developed the Water Research, Development and Innovation (RDI) Roadmap to improve the governance of strategic water source areas, and strengthen ecological infrastructure to be more resilient to the effects of climate change.

We have also set up the South African Risk and Vulnerability Atlas as a decision-support tool for municipalities to assist with planning for climate change.

However, the initiative is further used in tracking efforts to achieve the Sustainable Development Goals in South Africa and has been used by the Department of Forestry Fisheries and the Environment (DFFE) to assist with the National Climate Information System.

Ladies and gentlemen

South Africa will continue to build the NSI and knowledge generation through the Square Kilometre Array, the DSI funded National Integrated Cyberinfrastructure System (NICIS), and through the National Policy Data Observatory (NPDO).

Through the South African National Space Agency (SANSA), we have been developing space capability in operational space weather over the past ten years.

Given the current move towards the Fourth Industrial Revolution (4IR), this national programme will allow for the future domestic and regional mitigation of the vulnerabilities caused by space weather events impacting the Internet of Things.

We have also invested over R30 million in the Maritime Domain Awareness (MDA) cube satellite constellation development.

Since 2013, our department Information and Communication Technology (ICT) RDI Roadmap served to direct investments in ICT-related RDI against the backdrop of rapid technological change, driven by the blurring of boundaries between the physical and digital worlds (4IR).

To respond adequately to this, through the Decadal Plan, we have identified six foundational digital domains on which South Africa should focus its resources for the next 10 years, namely, artificial intelligence, robotics and cybernetics; augmented, virtual and mixed reality; modelling and simulation; blockchain and cybersecurity; the Internet of Things, cloud-to-edge computing and networking; and quantum computing.

Investment in these domains will enable STI to provide opportunities for new sources of economic and social development.

We have also drafted a Foundational Digital Capabilities Research (FDCR) Programme in collaboration with the CSIR to refocus efforts on building foundational capabilities in the six identified domains.

As a department, we are also leading the open science policy development process by setting out the vision and rules of the game with the support of the DSI-convened Open Science Advisory Board and three experts (who consult with communities of practice, other experts and key stakeholders).

The board and experts are tasked with ensuring that the South African Open Science Policy is based on high-quality data and solid policy advice.

I can assure you today, that our draft open science policy is in line with the definition, values, principles and actions outlined in the 2021 UNESCO Recommendation on Open Science.

Ladies and gentlemen

In conclusion, I am look forward to the outcome of deliberations from this colloquium in guiding us on our arduous journey of ensuring the we position the STI at the centre of our economic development, job creation and the eradication of poverty in our country and continent.

I thank you.