Minister Pandor's address to the 15th anniversary symposium of the Prince Claus Chair

Royal Palace
Den Haag
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"Science diplomacy and development: the role of higher education"

It's a great honour and privilege for me to be given an opportunity to speak at this celebration of the life of a leader committed to human development and the promotion of excellence through international cooperation. Prince Claus was fully alert to the need to ensure that international diplomacy between different regions and peoples resulted in changed lives and changed societies.

South Africa is a young democracy that emerged from oppression just twenty-four years ago. The country has had to dedicate attention to identifying and investing in sectors that can make a fundamental contribution to achieving increased equality, shared prosperity, and inclusive economic growth. Science and technology was selected as such a sector along with innovation. Education, particularly higher education were also prioritized as key contributors to achieving the objectives of national development.

South Africa was fortunate in that it has a well developed higher education sector and several universities that have a formidable research capacity and thus the talent and infrastructure to contribute to science development and technology innovation.

This aspiration for development through science is found in the entire African continent, but several countries lack research intensive universities and science agencies.

Nevertheless despite these challenges encouraging progress has been made in several African countries and international collaboration has been a significant support for our initiatives.

More and more African researchers are broadening their horizons and engaging in much-needed projects in food security, energy, transport, and health (malaria and HIV). This has seen the number of papers from African researchers double in just over a decade, improving in quantity, quality, and international citation according to data from Scopus, the largest database of peer-reviewed literature.

There is more and more funding for African research.

This includes the Grand Challenges Africa Grants, $7 million in grants over the next five years for scientific breakthroughs in maternal healthcare and precision medicine in Africa; the Kwame Nkrumah Scientific award from the African Union, $100,000 to top African scientists who provide innovations in life and earth science; the Next Einstein Fellowship, which recognises Africa's distinguished scientists under the age of 42.

The Next Einstein Forum meeting held in Kigali in Rwanda last week saw the biggest gathering of African researchers ever.

Neil Turok, Next Einstein founder, tweeted: "When Africans enter science in large

numbers, with their diversity, backgrounds & motivation, they will make massive, transformative discoveries. Those discoveries are just waiting there to be made."

Then there are innovation prizes. These include, pharmaceutical and consumer good company Johnson & Johnson 100,000 Africa Innovation Challenge; and telecommunications company Etisalat innovation prize for products, services or ideas that promote mobile broadband usage. There are many more.

These challenges, awards and prizes are surely a recognition of emerging African talent.

We need to strengthen and build on these initiatives and many others to ensure a robust and sustainable research and

innovation sector in all African countries. Increased attention must be given to finding resources to increase our research focus beyond agriculture and health. Young researchers have a wide range of fields of interest. We must support them to explore a diversity of disciplines.

In South Africa we have tried to put in place the best science and technology policies. We have a separate department to prioritise research. We have made science and technology a national priority.

We focus on promoting specific areas for R&D - astronomy, energy, bio economy - in which we are becoming world leaders. We invest in vibrant, knowledge-based activities that are driven by the quality of the scientists we train, the quality of our research and development infrastructure,

and the enablers we have put in place to turn scientific research into technology.

That's why we invest in centres of excellence, research chairs and national research facilities.

Our greatest challenge lies in providing exciting opportunities to our young people.

It’s clear that high-tech innovations will help employment grow over the long term, as new technology spreads from one sector to adjacent sectors and so throughout the economy. But it's also clear that the emerging high-technology sectors by themselves don't employ more people at the moment (innovation works through the "creative destruction" of jobs). However, the future lies in the emergence of the vast field of artificial intelligence and that’s what we are focussing upon.

Let me take the example of the SKA.

I have spent much time with SKA and have developed a deep appreciation of its importance.

On the one hand, big science infrastructure projects like SKA tend to have unexpected spinoffs. It's a telescope but it’s also an IT project of the kind that pushes the boundaries of global technology. Big tech companies are already involved, because they know it will allow them to develop the knowledge and technologies that will keep them at the leading edge of computing.

On the other hand, what can be more important than seeking a better understanding of our origins, how the universe was born, or how galaxies and stars were formed? Astronomy is a

discipline that gives context to our place in the universe and a framework for how we see the world.

The construction of the SKA is set to start in 2018, with early science observations in 2020.

Producing the thousands of dishes required for the SKA within the project's time scales will also demand an entirely new way of building highly sophisticated and sensitive scientific instruments, which should lead to innovations in manufacturing and construction.

For the next 10 to 12 years, the building of and support services to MeerKAT and the SKA itself will create jobs. Following that, the running and maintenance of the SKA will create jobs for the next 50 years.

An important impact of South Africa's SKA Project (and the country's successful bid to host the SKA) is the surge of interest in studying Mathematics, Engineering and Astrophysics at local universities it is causing, as well as attracting top students and academics from around the world to South Africa.

This mega project is therefore an ideal platform to excite young people about a SET career, and to train skills that will be in demand in the global knowledge economy of the future.

Africa has made a major investment in the future through the SKA.

Global research infrastructure projects play an invaluable role in focusing the attention of policy- and decision-makers as well as the broader public on science and

technology. They are an excellent vehicle for encouraging the youth's interest in science and technology careers.

Global research infrastructure projects enjoy "flagship" status, largely as a result of their scope and their large scale, and concurrently also command high levels of public interest.

There exists a crucial interface between the global development of science and international development, this interface being most acute in developing countries whose national development imperatives must be strongly informed and underpinned by science, technology and innovation.

During the past twenty years science cooperation with European countries has played a valuable part in facilitating South

African scientists' integration into the global community following the isolation of apartheid. Through multiple training, mobility and networking programmes, international partnerships actively contributed to human capital development for science and technology in South Africa. These are partnerships we greatly appreciate. If South Africa today has a vibrant national system of innovation, with knowledge production consistently on the increase, this is no small part due to international cooperation.

I would like to thank all our international partners for their support in this regard.

We are, however, committed to building our own knowledge generation and innovation capacities in high technology fields and sectors and SKA is leading the way.

It’s imperative for Africa’s scientists to work in Africa, if they are to support development on the continent, if they are to play a role in smooth technology transfer, and if they are to drive innovation. A global project such as the SKA is giving effect to all these objectives.

The best investment in Africa’s long-term sustainable development is an investment in the continent’s indigenous research and innovation capacities.

I believe there is now a golden opportunity to develop new, strategic and mutually beneficial African science partnerships. These are partnerships that will not only enrich the global scientific knowledge base but also transform scientific disciplines to the benefit of us all.

Prosperous African nations are those with governments that create the right enabling environment for science and technology innovation to flourish. Determining the best technology policy is relatively straightforward, but having the people ready to take advantage of resource-rich opportunities is the real challenge. The most important new technology driver is highly skilled human capital. We all compete in a global market for scientists and entrepreneurs.