

# SCIENCE FORUM South Africa

## Overview

### Introduction

Across the world nations increasingly seek to harness the potential of science as an instrument for growth and development. Science is also an integral part of the global effort to advance sustainable development. The interface between science and society and the interrogation of the role of science in society has therefore never been more critical.

Against this background South Africa's Minister of Science and Technology, Minister Naledi Pandor has convened on 8-9 December 2015 in Pretoria, the first "Science Forum South Africa" (SFSa.) The event is designed as a "public science" event open to all interested stakeholders, which will provide a platform for discussion and debate on the role of science in South African and African society as well as globally.

The event will, thus, seek to provide Africa with its first "open science" event, similar to forums convened with great success elsewhere in the world. The two-day programme will bring together more than 1 500 participants for discussion and debate in four plenary sessions, 32 (parallel) short seminars and 18 individual lectures (labelled as "Science talks." The SFSa will also include an exhibition and public outreach activities.

### Plenary sessions

The **opening plenary session** in addition to comprising Minister Pandor's opening address will include remarks by the African Union's Commissioner for science and technology and representatives of the Forum's partners such as the European Commission and the International Council for Science. Forum participants will also have the honour to be addressed by the founder of Japan's renowned Science and Technology in Society Forum, Mr Koji Omi. This session will further include the inaugural Science Forum South Africa lecture to be delivered by one of South Africa's most eminent scientists, Prof Salim Abdool Karim, internationally acclaimed for his work in the fight against HIV-AIDS. Prof Karim will share his reflections on science's response to societal challenges in South Africa.

With the current international negotiations on the United Nations Framework Convention on Climate Change in Paris enjoying huge public attention, the SFSa will include a **plenary debate on the science, technology and innovation response to climate change**. Chaired by the Chairperson of South Africa's National Advisory Council on Innovation, Prof Cheryl de la Rey and introduced by renowned South African systems ecologist and contributor to the International Panel on Climate Change, Prof Bob Scholes, the debate will include contributions from experts from Africa, the Americas, Asia, Europe and Oceania. These will include Dr Tanya Abrahamse, of the South African National Biodiversity Institute and member of the Scientific Advisory Board of the United Nations Secretary-General.

The second **plenary debate** (organised on the second day) **will focus on how to best harness science, technology and innovation for South Africa's National Development Plan**, drawing on international experience. The debate will be moderated by the CEO of South Africa's Technology Innovation Agency, Mr Barlow Manilal and introduced by the Department of Science and Technology's Director-General, Dr Phil Mjwara. Panellists will include national and international experts, such as Dr Ben Ngubane, democratic South Africa's first Minister of Science and Technology; Prof Tebello Nyokong, a member of the United Nations high-level panel on the "Technology Bank and Science, Technology and Innovation Support Mechanism", proposed to support the attainment of the Sustainable Development Goals; as well as Prof Anil Gupta of India – an internationally celebrated expert on "grassroots innovation."

The **closing plenary discussion** will see the awarding of the "SFSa Science Diplomacy Awards", which will recognise excellence and achievements in international scientific cooperation. A report highlighting the main messages emanating from the Forum will be compiled and presented by young officials of the Department of Science and Technology, on which international science policy thought leaders will comment, before Minister Pandor and Prof Romain Murenzi, Executive Director of the World Academy of Sciences will close proceedings with their remarks.

## Short seminars (parallel programme)

The heart of the SFSA programme will comprise 32 short seminars, all 90 minutes long and providing for ample opportunity for public participation, organised according to eight parallel “tracks” of sessions. The 32 seminars were selected following the evaluation of proposals submitted by South African and international organisations in response to a call for proposals, thus ensuring the SFSA programme was compiled with maximum public participation.

The themes of the tracks reflect South African and international science policy priorities, such as enhancing science’s response to societal challenges; developing skills for the knowledge economy; promoting a science agenda for Africa; and encouraging the science and society conversation. Given the priority focus on space science in South Africa one track will be dedicated to space science and astronomy under the theme of “African eyes on the sky”, whilst with the objective in mind to highlight South Africa’s value proposition for international science partnerships, another track will focus on “showcasing South African science.”

In order to accommodate as many as possible of the quality proposals submitted in response to the call, two additional tracks have been included under the themes of “Science Indaba I” and “Science Indaba II”. Indaba is a word from one of South Africa’s indigenous languages signifying an important conference or meeting such as the SFSA.

Note: Forum participants are able to move freely between tracks and sessions according to their areas of interest and the vibrancy of debate. All sessions will prioritize opportunity for public debate. An overview of sessions organised under the different tracks follows below.

### Responding to societal challenges track

---

Across the world countries have to adapt to the dynamics of rapidly increasing urbanisation. The first session in this track will, thus, interrogate the “**The science of cities and urbanisation.**” The second session in this track will focus on the emerging frontier science of biophysics, i.e. the application of the laws of physics to biological phenomena, and how it could be harnessed to support competitive “bio-economies.” Specifically the session will focus on how “**Biophysics underpins bio-design and a vibrant bio-economy.**” The third session will focus on public health, one of the most critical societal challenges to which science must respond. A panel of international experts will discuss best practice in “**Collaborations for public health advancement.**” The concluding session in this track will pose the very topical question for drought stricken countries such as South Africa: “**Water wars of the future: how does the research & development and innovation community respond?**”

### Skills for the knowledge economy track

---

Addressing gender imbalances in science and technology is a critical component of ensuring optimal human capital development for the 21st century. The first session in this track, featuring the participation of Dr Nkosazana Dlamini-Zuma, Chairperson of the African Union Commission will, thus, focus on “**Non-traditional science, technology and innovation partnerships: Women in science, technology, engineering and mathematics education – the role of philanthropy.**” Developing skills for the knowledge economy also require a critical assessment of the education enterprise. In this context, the second session of this track will study the phenomenon of “**Massive Open Online Courses (MOOCs): Challenges and Opportunities for Education in Africa.**” Given its critical importance – the third session will again focus on the gender theme: “**Applying the gender lens in science, technology and innovation: Where are we now and what do we need to do next?**” The concluding session will focus on skills requirements for what is often referred to as the big data economy. International experts brought together by the new Science International partnership will discuss the dynamics of “**Open data in a big data world.**”

### Showcasing South African science track

---

The first session in this track will focus on the palaeosciences, a discipline where South Africa due to its unique sites and fossil deposits enjoys a comparative geographic advantage. The session will focus on “**The palaeosciences as a powerful outreach tool for social cohesion and environmental conservation.**” The second session will celebrate South African expertise in manufacturing technologies: “**Fast 3D printing of metal parts for aerospace and medical: A first for Africa.**” The third session will put South Africa’s research strengths in the social sciences in the spotlight with an interrogation of the “**The role of government in addressing poverty and inequality.**” The fourth session will offer a rich kaleidoscope of South Africa’s science strengths with insight into the achievements and work of laureates of South Africa’s leading science awards programme: “**Celebrating excellence: review of the National Science and Technology Forum (NSTF) Awards.**”

## African Eyes on the Sky track

---

The first session in this track is presented by the South African National Space Agency looking how through for example Earth observation programmes at the dynamics of **“Space science responding to society’s needs.”** International cooperation is absolute critical for the space sciences and the second session will accordingly be **“Exploring the potential for Brazil, Russia, India, China and South Africa (BRICS) partnership in astronomy.”** Africa will be a co-host of the global Square Kilometre Array (SKA) radio telescope, which will become the world’s largest radio telescope. The third session of the track will, thus, focus on the **“SKA as flagship for global science in the 21st century and its socio-economic impact.”** The non-science, e.g. socio-economic, benefits of astronomy will also be in the spotlight for the track’s fourth session looking at **“Astronomy for development”** and the work done by International Astronomical Union in this regard.

## Science agenda for Africa track

---

One of Forum’s flagship tracks will commence with a provocative look by leading African scholars at **“Creatively destroying Africa: Rethinking inclusion, integration and sustainable development through science, technology and innovation.”** The second session will look at the success of one Africa’s foremost pan-African scientific institutions, the African Institute of Mathematical Sciences and its **“Next Einstein Initiative: Transforming African Science.”** The third session will focus on a societal benefit area which should be a priority for African science: the **“Strengthening of Agricultural Innovation Systems for Agricultural Transformation in Africa.”** One of the key priorities for enhancing African cooperation in science is the development of research funding programmes with a continental programmes. The African Academy of Sciences will, thus, in the fourth session present **“Accelerating science cooperation in Africa, profiling the Alliance for Excellence in Science in Africa.”**

## Science and society conversation track

---

The relevance of science for government policy-making and the impact for society will be in the spotlight in the first session in this track, focused upon **“Systems analysis for government planning.”** The role of science in informing policy- and decision-making will also be in the spotlight of the second session, when global developments will be reviewed under the theme of **“International partnership for government science advice.”** Continuing with this topic, the third session with strong media participation will interrogate the role of **“Scientists from public experts: from evidence to advocacy.”** The fourth session will contextualise the science and society interface within the public health domain by considering **“Harm reduction: scientists tackling our lifestyle killers.”**

## Science Indaba I track

---

The track has a rich offering. The first session will focus on the promotion of public understanding and awareness of science – a major horizontal theme for SFSA – by looking at **“Science centres and outreach programmes: Tandem development of people and programmes.”** The second session in this track will build on the earlier plenary climate change debate by reviewing progress in research and innovation efforts within the context of **“Climate change and a unique regional Earth system.”** The third session will look at a priority agricultural research theme for Africa: **“Consortium and multi-stakeholder partnerships in grain research: development of a wheat breeding platform.”** The track will conclude with a presentation in the fourth session of the **“World Bank report on a decade of science, technology, engineering and mathematics education in Africa.”**

## Science Indaba II track

---

Like Science Indaba I, the track offers an exciting programme of different topics all linked to the SFSA themes. The first session will have a critical look at human capital development under the topic of **“Preparing for careers that do not exist yet.”** Only weeks after their adoption by world leaders the Sustainable Development Goals will be in focus in the second session looking at **“Governing science, technology and innovation to secure the sustainable development goals in Africa- from dialogue to practical actions.”** The environment will be in the focus in the third session in track, which will discuss **“Change is in the air: global change and land management.”** The track will conclude with a fourth session (the third dedicated to gender in the SFSA programme) discussing **“Action-orientated approaches to addressing gender equality in science and technology.”**

## Science talks

The “Science talks” programme will conclude the first day of the SFSA proceedings with a series of 18 lectures of 30 minutes each delivered by eminent thought leaders as part of three cycles each comprising six lectures. These lectures will run concurrent with a networking reception and as with the short seminar programme, Forum participants will be able to move freely between lectures and the networking reception according to their areas of interest. The aim is to create a dynamic and lively discussion environment enabling a vibrant exchange of ideas, fostering partnerships and cooperation.

The **first cycle** will notably include a lecture by the Director-General of the International Centre for Genetic Engineering and Biotechnology on “Modern biotechnology and the African challenge.” International partnerships will be on offer in a presentation of “Skoltech – a new English-speaking university in Russia: strategy and international networking.” The scientific response to societal challenges specifically with regard to energy will be presented in a lecture on “A renewable-based South African energy system.”

The SFSA has been actively supported by the Non-Aligned Movement Centre of Science and Technology and the first cycle of the Science talks will, thus, include a lecture by the Centre’s Director-General on “Science, technology and innovation policy-making in developing countries – initiatives in emerging economies.” The last two lectures in the first cycle will focus on large-scale research infrastructures, with firstly a Russian perspective on “Mega science projects” and secondly the “Square Kilometre Array: Big Telescope, Big Science, Big Data.”

The **second cycle** continues with a focus on the SKA project with a lecture on “The SKA in the Public Sphere in South Africa.” Public health will again be in the spotlight with a lecture discussing “What are the guidelines for the development and the effective use of point of care diagnostic tools when managing diseases in poor resource clinics in South Africa?” The health sciences will also be the focus of the third lecture in the second cycle examining “Biomedical research infrastructures for Africa.”

The SFSA takes place shortly after the second anniversary of the death of democratic South Africa’s first President, Nelson Mandela. A lecture in the Science talks will focus on “Understanding the keys to longevity and the lessons of longevity learned from the long life of the late President Nelson Mandela.” Large-scale research infrastructures will be in focus in the second cycle with a presentation of the “African Light Source.” International cooperation in astronomy will be reviewed in a talk focused upon the African European Radio Astronomy Platform (AERAP)

The **third and concluding cycle** of the Science talks also comprises a programme, which should stimulate the SFSA debate. A lecture will discuss “Hi-tech health for low-income countries: Possibility and pipedream.” Industrial technology will get a hearing in a talk devoted to “Efficiency and advanced manufacturing”, whilst the African agenda for science will remain in the spotlight during the talk on “Operationalising the science agenda for Africa: where is the human capital?”

The cycle will include a focus on science’s response to day-to-day questions with a lecture on “Skin colour and hair: myths and mysteries”, whilst science’s role in boosting economic growth through green technology will be the focus of the talk on “Unlocking the economic potential of the waste hierarchy through science, technology and innovation.” The climate change and agriculture interface will be the focus of the cycle’s final talk, looking at “The role of Soil and Biochar-fertilisers’ interactions in improving soil fertility and climate change.”

## Exhibition, public outreach and other activities

More than 50 South African and international organisations will participate in the SFSA exhibition to showcase their work in order to foster partnerships. The exhibition will include several national country exhibits. As part of the Forum’s science communication focus public outreach activities, with a focus on science education for the youth, will be conducted in several South African metropolitan areas concurrent with the SFSA. In order to support the international science and society debate, during lunch on the second day, the Forum programme will include an opportunity for presentations by the organisers of other international events with a similar orientation as the SFSA, such as the Japanese Science Agora or the European Open Science Forum.

For further information including the full SFSA programme visit  
[www.sfsa.co.za](http://www.sfsa.co.za)