



NRF Mandate

- Support and promote research and knowledge generation through human capacity development
- Support and promote research and knowledge generation through the provision of National Research Platforms
- Strengthen the relationship between Science and Society through Science Engagement
- Contribute to National Imperatives


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National Research Foundation

NRF Strategy 2020

Strategic Outcomes:

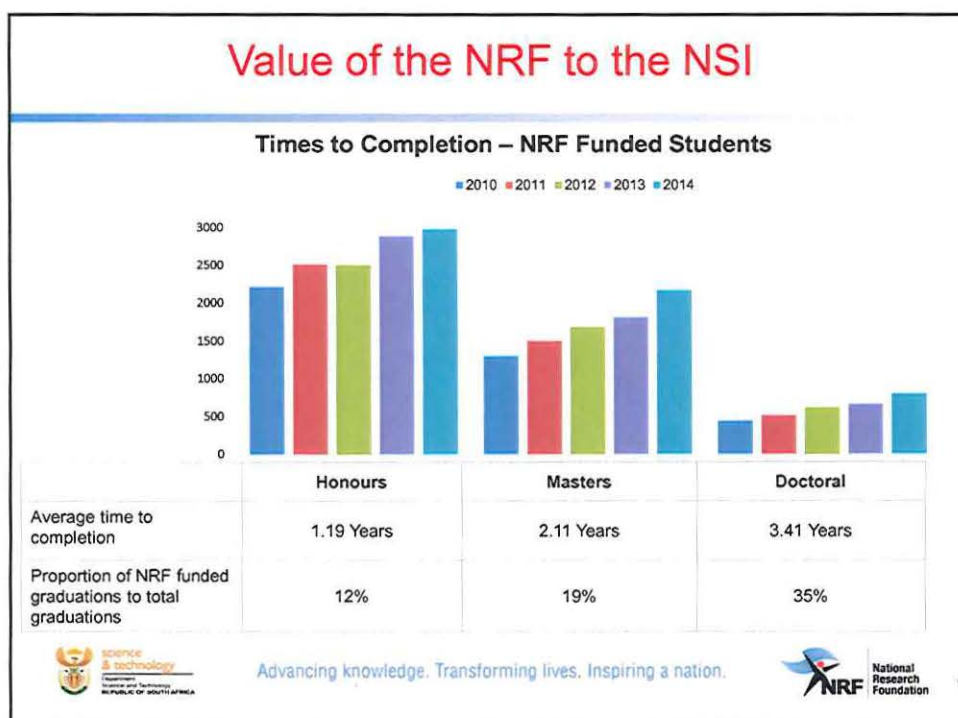
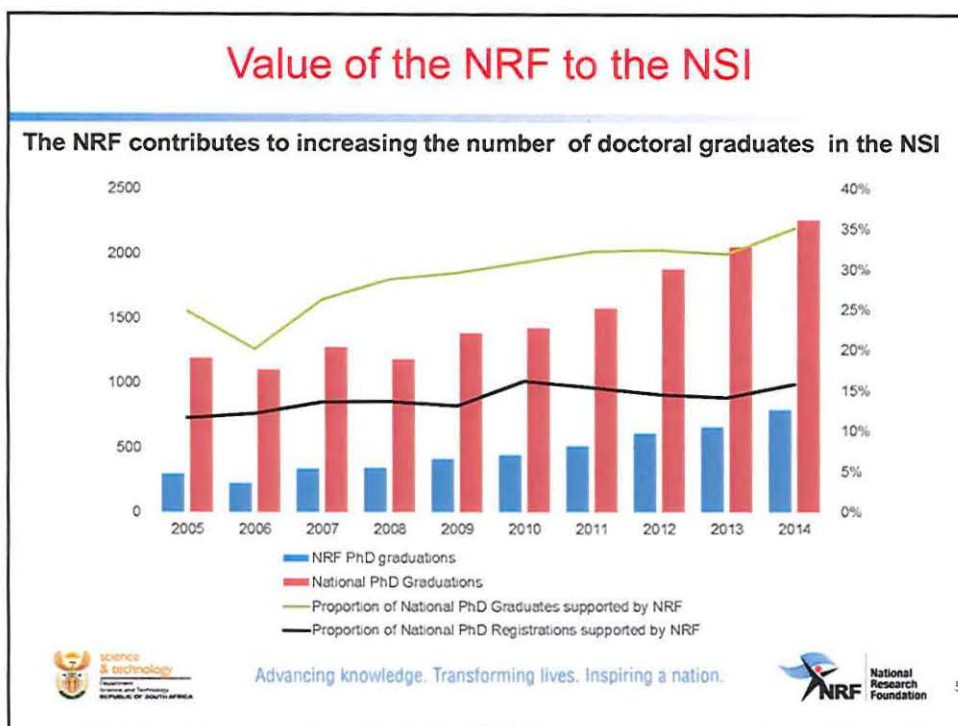
Values:
*Passion for excellence
 World-class Service
 People-Centred
 Respect
 Integrity and Ethics
 Accountability*

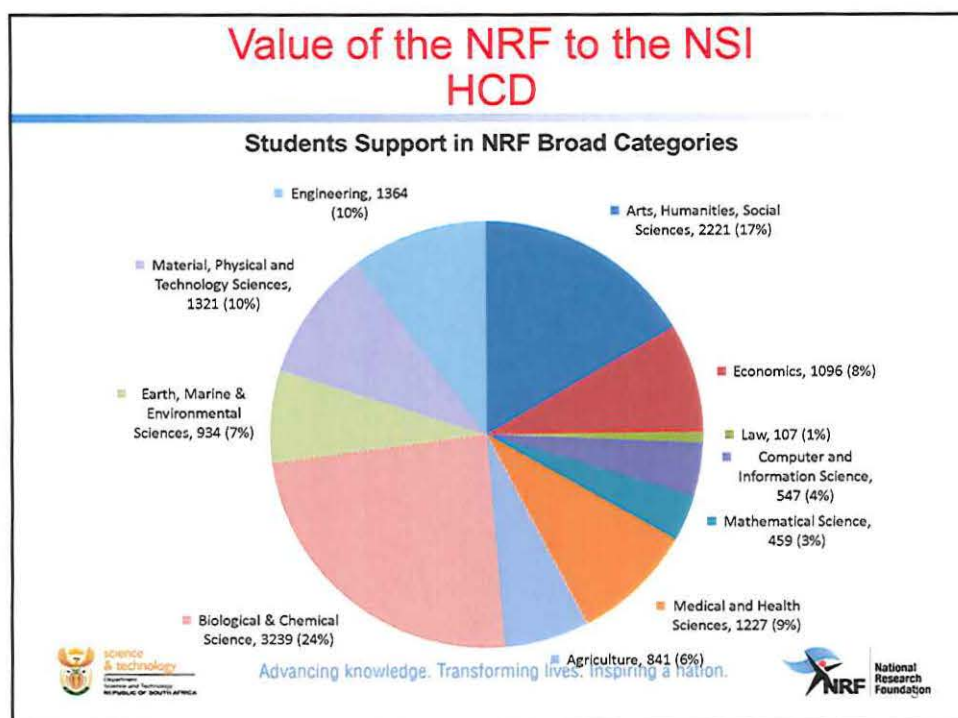
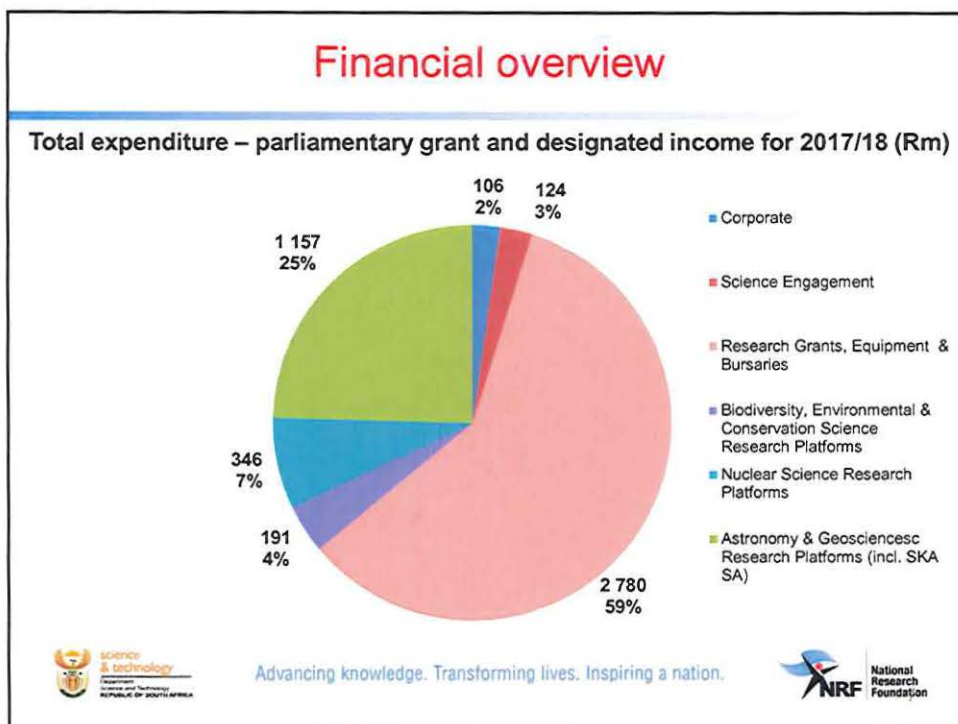
Vision:
...Catalysing knowledge production for societal benefit.

Mission:
...To contribute to the knowledge economy in South Africa by attaining at least 1% of the global research and development (R&D) output by 2020.


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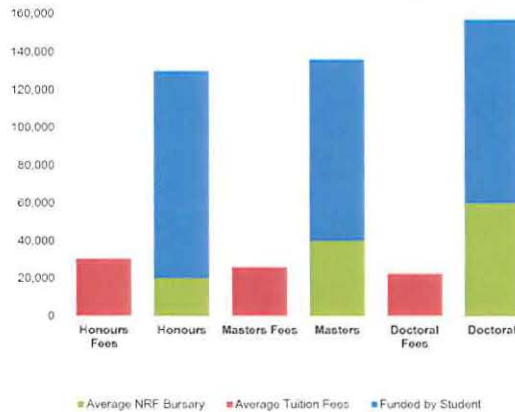
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Some challenges for the NRF

Adequacy of Funding



For greater reach of, and improved contribution to HCD in the NSI the NRF must:

- Increase the adequacy of student support
- Increase proportion of students supported
- Increase throughput and retention of students from honours to doctoral degree and beyond

(Annual Cost of Degree is based on an average current fee structure including books, accommodation, registration, and tuition)



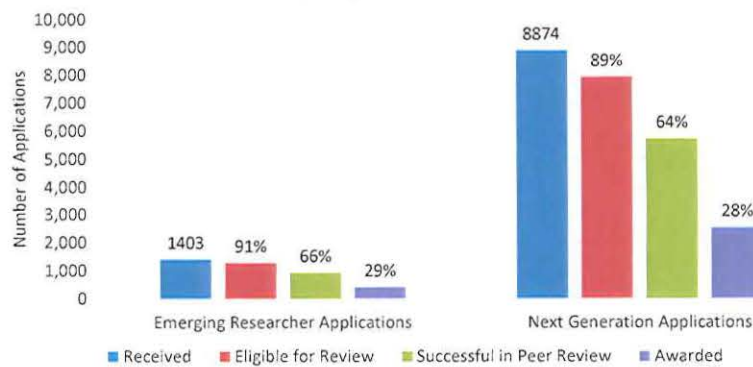
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Some Challenges for the NRF

Adequacy of Reach – 2017/18

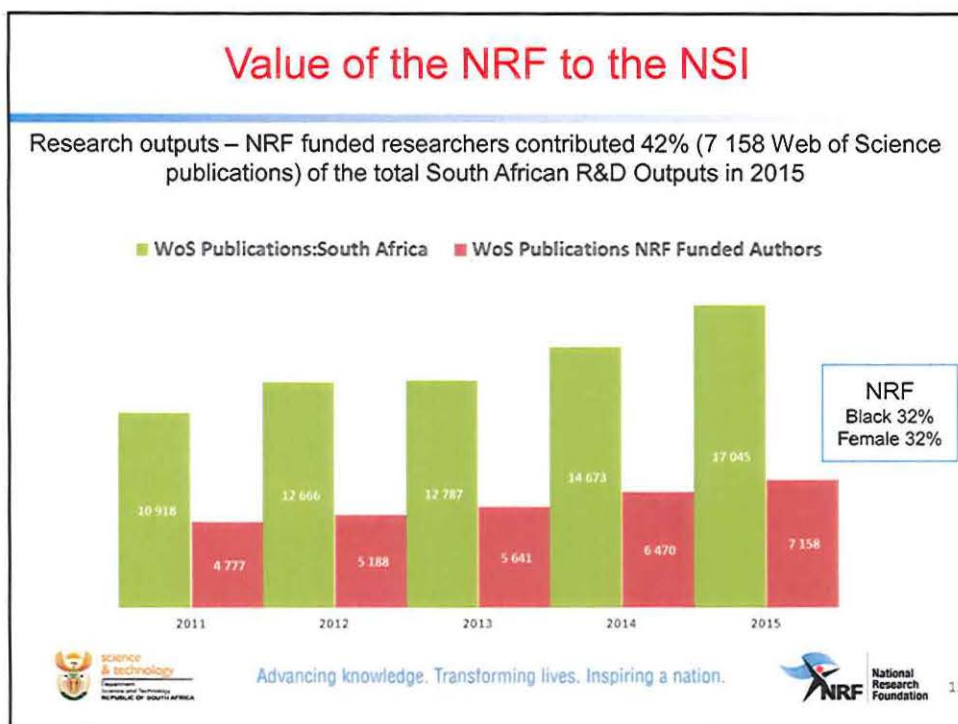


- 513 fundable emerging researchers including post-doctoral fellows could not be supported
- 3 193 fundable masters and doctoral students could not be supported



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Value of the NRF to the NSI Socio-Economic Impact

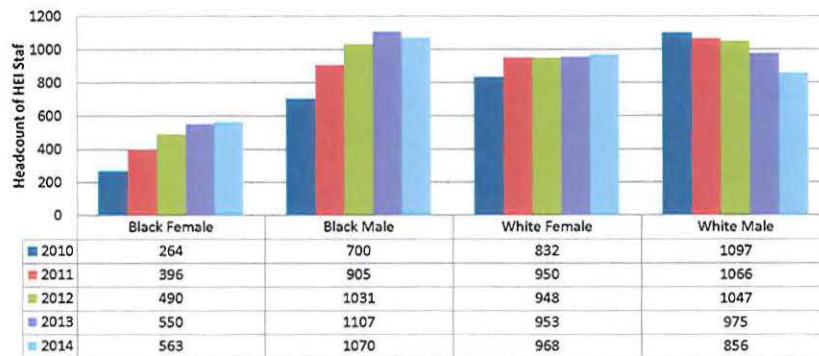
BASIC EDUCATION	<ul style="list-style-type: none"> 13 SARCHI Chairs focussing Mathematic; Numeracy Education; Integrated studies of learning Languages, Mathematics and Science; Teacher Education; Higher Education and Human development; and Work integrated Learning. Science Education is an integral component in encouraging the exploration of STEMI as a career. Focussed initiatives cater for teacher training and learner engagement opportunities;
HEALTH	<ul style="list-style-type: none"> 40 SARCHI Chairs focussing on HIV Vaccination Translation; Detection of Cardiovascular diseases; Poverty related diseases; TB Biomarkers; Malaria etc. 3 CoEs focussing on epidemiology, HIV Prevention and Biomedical TB Research iThemba LABS supplies rare isotopes global for the early detection and treatment of cancers and provides the only cancer treatment facility of its kind on the continent.
INFRASTRUCTURE NETWORKS	<ul style="list-style-type: none"> The NRF funds Research Renewable Energy Solutions through : <ul style="list-style-type: none"> Energy Human Capacity Development and Knowledge Generation (EHCD&KG) Programme ; the Energy Research Programme (ERP); iThemba LABS provide nuclear research infrastructure; The NRF also provided world class research infrastructure in various science domains
SUSTAINABLE RURAL COMMUNITIES	<ul style="list-style-type: none"> 16 SARCHI Chairs focussing on a rage of contributing themes including Human mobility; Social-Ecological Systems Resilience; Applied poverty Reduction and the Sociology of Land. Environmental and Sustainable Development; 1 CoE in Human Development has certain complementary themes in researching the socio-economic development of individuals and societies

Value of the NRF to the NSI Socio-Economic Impact

FOOD SECURITY	<ul style="list-style-type: none"> • 2 UK/ SA SARCHI Bilateral Chairs focussing Food Security; • 2 SARCHI Chairs focussing of systems Biology for Food Security and Phytochemical food networks from a nutrition perspective • 1 CoE focussing on sustainable food systems to realise food security for poor, vulnerable and marginal populations.
PROTECTION OF ENVIRONMENTAL ASSETS	<ul style="list-style-type: none"> • 30 SARCHI Chairs focussing on environmental research in areas such as Agricultural Sciences; Agro-chemistry; Evolution Biology; as well as Climate Change; earth System Science; Marine Ecosystems and Paleo environmental Studies; • 3 CoEs in Biodiversity, Conservation and Biotechnology. • The National Research Facilities through SAEON and SAIAB have contributed to National Policy development around the protection of Environmental assets
CONTRIBUTING TO A BETTER WORLD	<ul style="list-style-type: none"> • The NRF builds on its brand and reputation to foster international research partnerships and scientific collaboration on the African continent and globally, thus playing a role in creating a better South Africa and Africa.
A COHESIVE SOCIETY	<ul style="list-style-type: none"> • The NRF Contributes through the effective generation, communication and dissemination of knowledge to society to this end, the NRF has: • 2 SARCHI Chairs in Science Communication

Some Challenges for the NRF

Researchers currently not supported by the NRF



69% increase in the number of black researchers not supported by the NRF
 40% increase in the number of female researchers not supported by the NRF



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Value of the NRF to the NSI

% increase	System Performance (2011 to 2017)
61%	Increase in number of doctoral students supported by NRF
80%	Increase in NRF supported doctoral graduates
56%	Increase in number of South African WoS publications
29%	Increase in proportion of global WoS publications
47%	Increase in number of female rated researchers
71%	Increase in number of black rated researchers
12,8%	Increase in normalized citation impact (currently 1,23)



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Value of the NRF to the NSI UWC – A Case Study

57 year old historically disadvantaged university with a rich history of advocating cultural and racial tolerance



1 596 permanent staff supporting a student body of 20 582*

Student population: 95% black (African 43%; Coloured 47%; Indian 5%)

60% of the student population is female

Enrolments:

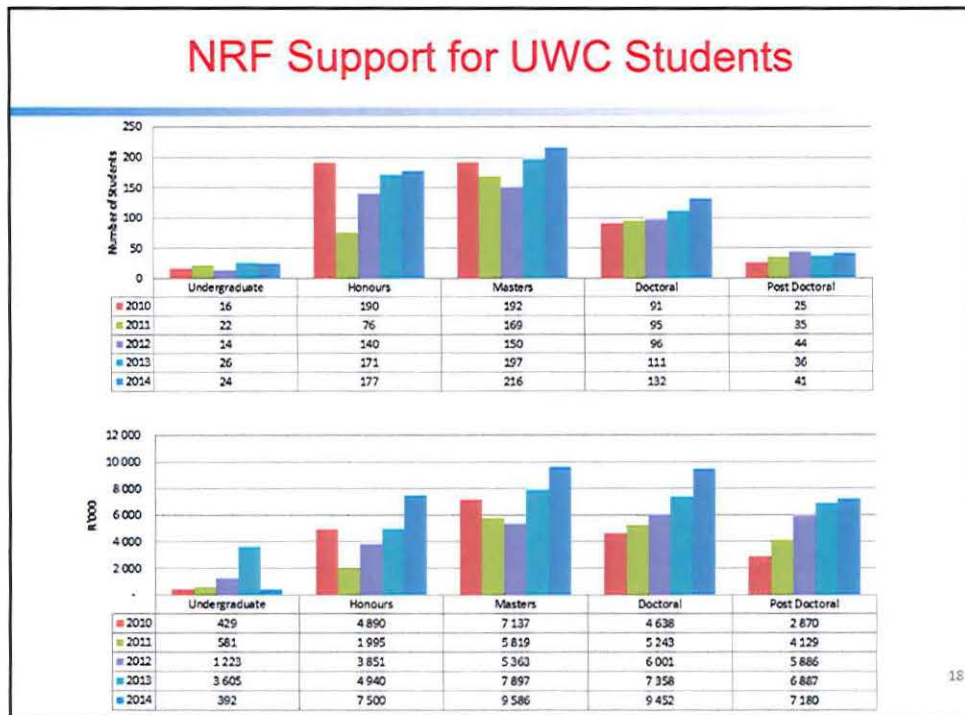
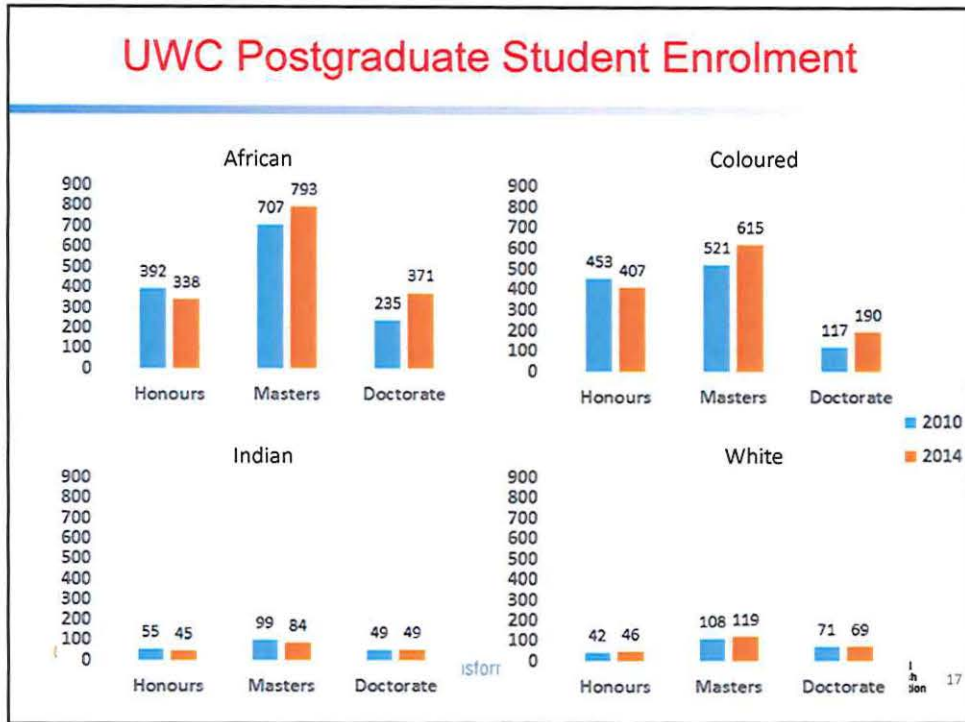
- Humanities – 41%
- SET fields – 38%
- Business management – 12%
- Education – 5.8%

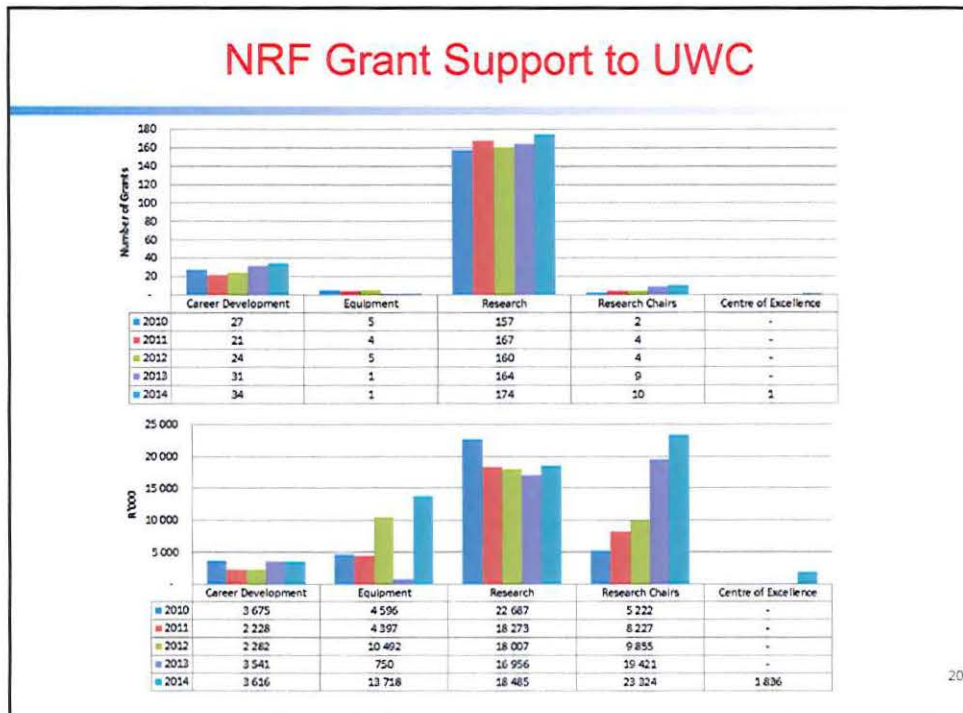
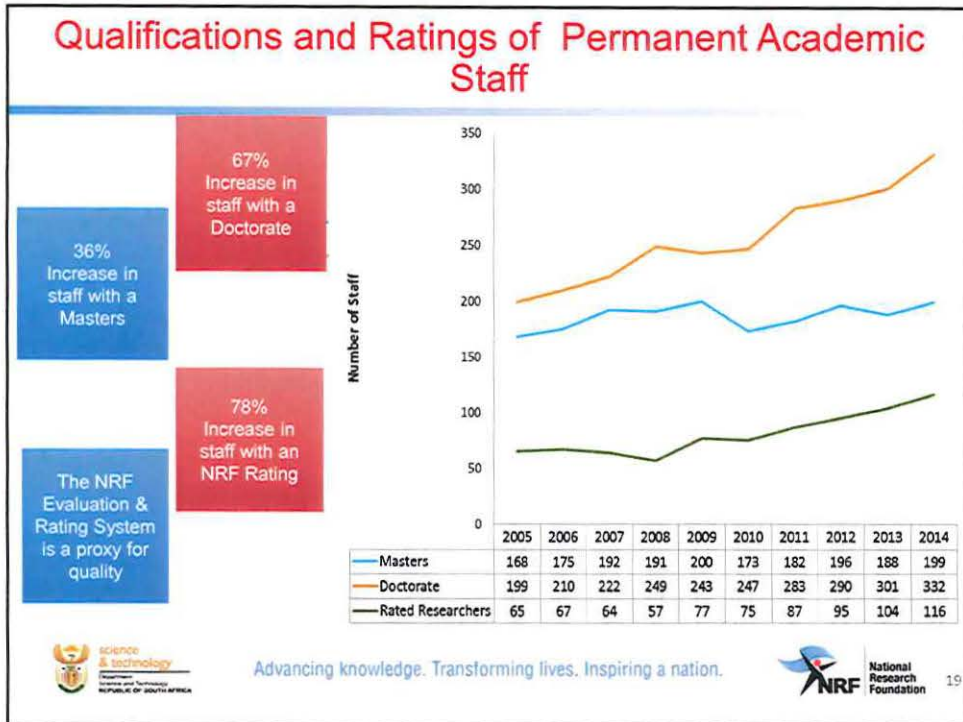


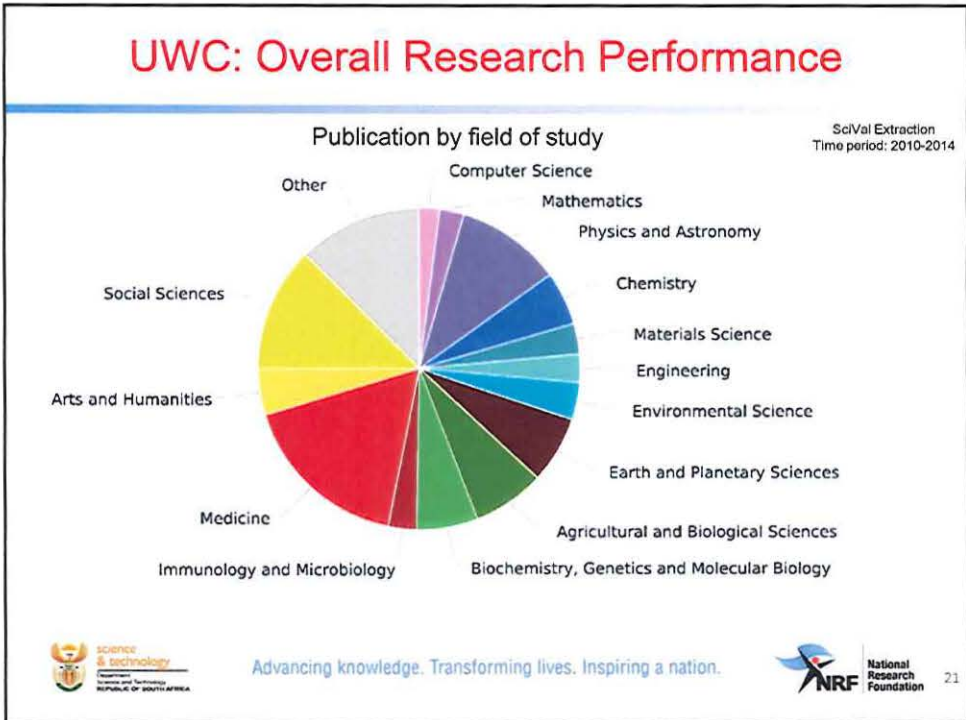
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UWC Research Excellence

Centre for Diversity in Counselling & Psychotherapy (CDP)

INSTITUTE FOR SOCIAL DEVELOPMENT (ISD)

Desmond Tutu Centre for Spirituality and Society

UNIVERSITY OF TORONTO
JAMES L. COLLIER INSTITUTE FOR STUDIES IN AFRICA

IMBM
KOPPEL INSTITUTE FOR MICROBIAL BIOTECHNOLOGY AND METAGENOMICS

PLAAS
20 YEARS
Institute for Protein, Land and Agrarian Studies

DULLAH OMAR INSTITUTE
FOR CONSTITUTIONAL LAW, GOVERNANCE AND HUMAN RIGHTS
Humanity. Integrity. Transforming lives. In:.

SANBI
South African National Bioinformatics Institute

NRF National Research Foundation

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National Research Infrastructure Platforms

Support and promote research and knowledge generation through the provision of National Research Infrastructure Platforms



NRF HartRAO
National Research Foundation
Hartbeespoorthoek Radio Astronomy Observatory



SKA
AFRICA
SQUARE KILOMETRE ARRAY



NRF SAAO
National Research Foundation
South African Astronomical Observatory



NRF SAIAB
National Research Foundation
South African Institute for Aquatic Biodiversity



NRF iThemba LABS
National Research Foundation
Laboratory for Accelerator Based Sciences



NRF SAEON
National Research Foundation
South African Environmental Observation Network




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The South African Institute for Aquatic Biodiversity

Internationally recognised centre for research into aquatic biodiversity.


- Research agenda
 - includes a broad spectrum of aquatic environments, from marine offshore to continental freshwater catchments;
 - aligned to the national imperatives of various departments within the NSI. These include the DST; DEA; DAFF and the Presidency
- SAIAB houses one of the largest fish collections on African Fish, the largest in Africa.



*South Africa's last "unseen frontier"
- A picture taken at a depth of 160 meters off the East London coast.*



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Value of NRF-SAIAB to the NSI

Platform	Needed for:	Used by:
National Collections & Biobanks:	Fisheries management, drug discovery, conservation	Scientists and students around the world.
Coastal craft fleet	Operation Phakisa, marine research, fisheries, mining impact assessments	Universities, ORI, Rhodes, CSIR, SharksBoard, BayWorld, SANParks, DEA
National acoustic telemetry array (120 marine underwater base stations that track fish migration)	Fisheries management, conservation, climate change	Universities, ORI, Rhodes, SharksBoard, BayWorld, SANParks, CAPE Nature, Sharkspotters, DAFF, DEA
National remote visual platform	Fisheries management, Marine Protected areas, climate change, subsistence fisheries	DAFF, DEA, UCT, Rhodes, ORI, Sanparks, SANBI, UWC



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Value of NRF-SAIAB to the NSI Socio-Economic Impact

Research contributed to the following areas:

Fisheries management (Freshwater & Marine)

- Which fish stocks can be used and how much can we take?
- How do we ensure sustainability in our fishing efforts?

Climate change

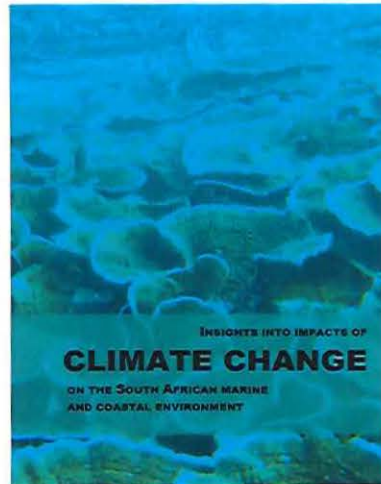
- How will climate change impact where our fish are found?

Freshwater management

- How much freshwater can we take out of our rivers and estuaries without damaging them?

Conservation

- Where should we put our protected areas and how many should we have?



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Value of NRF-SAIAB to the NSI Socio-Economic Impact

ACEP Phulisa programme.
Provides opportunities for historically disadvantaged students

- Increase in number of black students studying aquatic biodiversity.
- Increase in number of doctoral degrees
- A similar programme has just been started UniVen and Limpopo.



Contributes to the development and implementation of policy and regulations for conservation, fresh water management and food security, for example:

↓

DEA:

- Invasive species management
- State of the Environment Reporting
- Contributions to climate change country report and associated mitigation strategies

WRC:


- Rural fisheries management

DAFF:

- National Line fish assessments

Presidency:

- Lab participants and action leaders
OPERATION PHAKISA OCEANS







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iThemba Laboratory for Accelerator Based Sciences - LABS

- iThemba LABS is the only nuclear facility of its kind on the African Continent
- Core research centres around **Nuclear Physics, Materials Research, Radiation Biophysics, and Radionuclide research;**
- The National Facility is the only producer of:
 - accelerator-based radiopharmaceuticals for nuclear medicine;
 - mainstream radiopharmaceuticals for positron emission tomography (PET) studies in South Africa



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Value of the NRF-iThemba LABS to the NSI

The transdisciplinary research agenda of iThemba LABS brings together scientists working in the physical, medical and biological sciences to solve real world problems while still considering the origin and evolution of the universe.



SA Collaborators and Users of the Platforms

- University of the Western Cape
- University of Cape Town
- University of Stellenbosch
- Cape Peninsula University of Science and Technology
- University of the Witwatersrand
- University of Pretoria
- North West University
- Fort Hare University
- University of KwaZulu Natal
- University of Zululand
- North West University
- Nelson Mandela Metropolitan
- University of Limpopo
- University of Venda
- University of Johannesburg
- The National Research Facilities



Value of the NRF-iThemba LABS to the NSI Socio-Economic Impact

iThemba LABS produces:

- 40% of the global supply of Germanium/ Gallium isotopes used for neuroendocrine tumour detection
- 20% of the Strontium/ Rubidium isotopes used for myocardial infarction imaging.

iThemba LABS is the only facility in the Southern Hemisphere that offers hadron therapy for cancer treatment

In partnership with universities of the Western Cape and Zululand, iThemba LABS runs the MANuS/MatSci programmes.

Graduates from this programme will contribute to supplying much needed human resources for the new nuclear energy build

Health

Energy security



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NRF Astronomy research infrastructure platforms

By 31 March 2016, 20 MeerKAT dishes has been delivered in preparation for first light.



Progress has been made on the conversion and refurbishment of the 32m Ghanaian telecoms dish for the AVN



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Value of NRF-Astronomy facilities to the NSI Socio-Economic Impact

An educationalist and expert in Physical Science education, is implementing a project in Carnarvon that aims to get young people interested in science, and will include:

- Grade 12 exam preparation in physical science
- Curriculum and non-curriculum experiments
- Refurbishment of the science labs in the schools
- Building science exhibits, by the learners, for the schools and the town



Five grade 12 learners with SKA SA learner support bursaries matriculated with university exemption in 2015. The learners have been awarded SKA SA undergraduate bursaries to study towards BSc and Computer Science degrees.



SKA SA facilitated training for local businesses to compete for government-tendered contracts; and Provided access to capital for 14 small, medium and micro-sized enterprises in the Northern Cape during pre-construction phase.



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Value of NRF-Astronomy facilities to the NSI Socio-Economic Impact



Two hospital beds were donated to Sutherland Clinic – one by the NRF Board/Executive, and the other by SAAO. SAAO also donated basic clinic equipment.

Sutherland Community Development Centre:

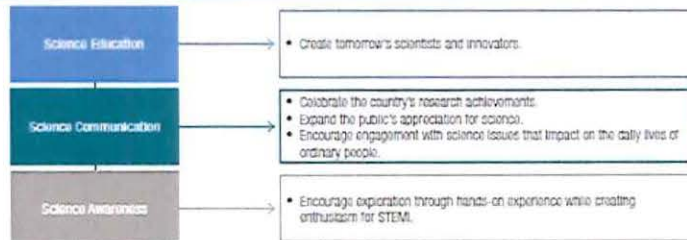
- Provides learners children with access to the internet for school assignments/projects;
- Develops reading skills at the reading corner;
- Teaches adults computer literacy and assists them to use internet banking;
- Develops skills such as chess in young learners.
- All training, assistance and education initiatives are provided by SAAO employees through the Science Engagement portfolio.



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Science Engagement



Key Partners

Industry	Science Community	Media	Outreach and Awareness Sector	Government Departments
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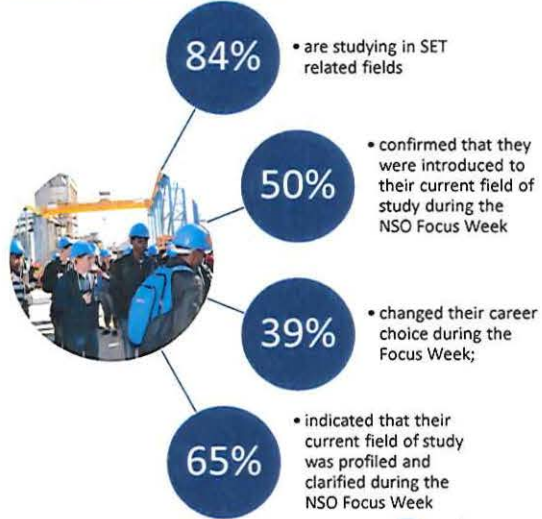
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Value of NRF-Science engagement to the NSI

There appears to be a positive correlation between learners' participation in Olympiads and competitions and learners' performance in mathematics and science at school.

A study tracked 43 grade 12 learners who participated in the 2014 NSO Focus Week



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Value of NRF-Science engagement to the NSI

Tania Moyikwa is a 21 year old honours student at UCT in the SAEON-funded oceanography programme and credits her career choice to attending the SAEON Egagasini Node Education Programme in grade 9:



I am glad to announce that SAEON has assisted me to establish myself, remove educational barriers to become who I want to be and has equipped me with all the necessary skills to practice science in my own field of interest – oceanography. Today I am becoming even more competitive and ready for the work place as I am receiving adequate training from the oceanography honours programme funded by SAEON at UCT. SAEON has eliminated a huge chunk of problems that would have inhibited me from excelling in my studies. I appreciate every moment with SAEON.



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Thank You



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