# **National Research Foundation Strategy**





science & technology

Department: Science and Technology REPUBLIC OF SOUTH AFRICA



2020



# Official sign-off

In accordance with National Treasury Regulations Chapter 5, Section 30, a Schedule 3A entity must table a new or revised strategic plan annually. The revision of NRF Strategy 2020 was developed by the management of the National Research Foundation (NRF) under the guidance of the NRF Board and the Department of Science and Technology (DST). The strategy takes into account all the relevant policies, legislation and other mandates for which the NRF is responsible. It accurately reflects the strategic outcome-oriented goals and objectives which the NRF will endeavour to achieve over the period 1 April 2015 to March 2020. It is hereby certified that this revision to the NRF Strategy 2020 was approved by Parliament in March 2016.

Signature:

Ms Faranah Osman Executive Director: Governance [Head Official responsible for Planning]

Signature: Dr Molapo Qhobela Chief Executive Officer [Accounting Officer]

Signature:

Mr Bishen Singh Group Executive: Finance and Business Systems [Chief Financial Officer]

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# A new strategy for a globally relevant organisation

In identifying a five-year strategy that complements the NRF Act and supports the execution of the NRF mandate, the organisation took stock of past performance and the realisation of its previous strategy, **NRF Vision 2015**.

In the new NRF Strategy 2020, the organisation places renewed emphasis on the agency function of the NRF and its role as a policy implementer within the National System of Innovation (NSI). Playing a critical integration role across the National Science System, the NRF – as an agency of government – has the ability to catalyse societally beneficial research and development in support of knowledge generation, human capacity development and innovation.

#### Through NRF Strategy 2020 the organisation will:

- Continue to stimulate transformation across the sector through the use of targeted funding instruments.
- Continue to support excellence with relevance, i.e. the organisation will support knowledge generation that continues to have a positive impact on the quality of life of the people of the Republic.
- Leverage off the NRF brand to accelerate engagement between countries on the African continent and globally, by funding human capacity development and knowledge generation for the benefit of Africa and the world.
- Ensure that the organisation continues to practice the highest standards of corporate governance, fiscal management and compliance, whilst ensuring business efficacy.

The core intent will remain an unwavering commitment to the transformation of the research landscape and a focus on excellence, thereby ensuring global relevance.



**NRF Strategy 2020** is built on the organisation's values and in recognition of the NRF's unwavering commitment to transformation, excellence, service culture and sustainability.

The NRF strategic outcomes have been created to embody the legislative mandate of the organisation, which ultimately contributes to the priorities set out in the Medium Term Strategic Framework (MTSF), which is National Government's strategic plan for 2014 to 2019 in line with the National Development Plan 2030. Ultimately, an efficiently executed strategy needs to remains flexible in order to accommodate systemic changes that will culminate in the achievement of the strategic outcomes at the end of the five-year cycle.

The strategic objectives and their related implementation plans were selected to support the achievement of the strategic outcomes. The organisation approaches the implementation of **NRF Strategy 2020** as an evolutionary process and will continue to develop customised instruments to address new challenges. In doing so, the NRF will engage within and beyond government-funded programmes and include the private sector in its endeavours to address the planned initiatives as set out below.



# In the NRF Strategy 2020, the organisation places renewed emphasis on its agency function

and its role in influencing and implementing policy within the National System of Innovation (NSI). The NRF plays an integration role across the science and technology system and has the ability to catalyse focused societally beneficial research and development in support of knowledge generation, human capacity development and innovation.





The NRF has taken an integrated approach to strategy implementation by setting clear objectives for each of the five diverse yet interconnected programmes. The implementation has been supported by structural and systemic realignment and renewal.

The NRF recognises that the strategic outcomes reflect a mix of organisational and system-level outcomes. It is imperative that the organisation, as an agency and policy implementer, attempts to orchestrate system-level shifts that are measurable.

# Programme 1: Corporate

Finance and Human Corporate

The NRF Corporate Programme is a cross-cutting support function that is responsible for the provision of enabling systems, activities and structures. The programme has three sub-programmes:

inance and Business Systems Human Co Resources and R Legal Services

Relations

# STRATEGIC OUTCOME:

A reputable and influential agency shaping the science and technology system

The NRF is mandated to fulfil a dual role within the NSI. Primarily, the organisation fulfils an agency role by interpreting, influencing and implementing national strategy and policy, and by supporting and promoting research through its grant-making and science engagement activities. In line with this, the NRF aims to support strategy development through the provision of system intelligence to the DST and other strategic stakeholders via its mature and integrated business intelligence channels.

The organisation will continue to build the NRF brand by contributing to systemic benefits and impacts through the support of research and capacity development, evidencebased policy-making and the delivery of high-level marketattractive entrepreneurial expertise. As a research performer, the organisation will continue to provide domain-specific, cuttingedge national research facilities charged with creating globally competitive research competence for South Africa and Africa.

Through the organisation's reputation for excellence, further opportunities exist to build partnerships in the public and private sectors, locally and globally.



# STRATEGIC OBJECTIVE 5:

Grow NRF influence, impact and reputation



As a public entity, the NRF has a responsibility to the citizens of the country to manage the business in a compliant, efficient and transparent manner. The NRF recognises that its governance environment is a strategic asset and will continue to focus on strengthening the system of governance across the organisation while imparting the values of good governance to staff and stakeholders.



## STRATEGIC OUTCOME: A skilled, committed and representative NRF research and technical workforce

Over the five years, the NRF will provide opportunities for a transformed staff complement to continue to develop and improve their skills levels. In line with MTSF priorities 4 and 5, the NRF ensures it attracts, retains, develops and trains the right number, equity and quality of staff. The organisation moreover takes cognisance of the unique complexities of the business and provides customised training and development solutions that complement business needs in order to ensure that the business is appropriately capacitated.





# Programme 2: Science Engagement



Programme 2 has an externally focused mandate that transcends the NRF stakeholder community. The new Strategic Framework for Science Engagement positions the NRF to extend the reach nationally, which will allow science engagement to play a pivotal role in the national landscape.

# STRATEGIC OUTCOME: Scientifically literate and engaged society

Over the next five years, the NRF will work towards the sustainable implementation and resourcing of the new Science Engagement Framework. At the core of the framework are four strategic aims, each with several proposed or existing interventions or initiatives. The strategic aims have been defined as follows:

- To popularise science, engineering, technology and innovation as attractive, relevant and accessible in order to enhance scientific literacy and awaken interest in relevant careers through science education support, science literacy for the public and career support;
- To develop a critical public that actively engages and participates in the national discourse of science and technology to the benefit of society. This will be achieved through citizen-centred dialogues; public engagement in research; and the use of the media as a form of dialogue between science and society.
- To promote science communication that will enhance science engagement in South Africa through science communications media, and science communication as a professional field.
- To profile South African science and science achievements domestically and internationally, demonstrating their contribution to national development and global science, thereby enhancing the public standing of South African science.

It is important that the successes of the South African science and innovation system be effectively communicated and profiled to demonstrate how the country's science system has advanced and contributed to national development. It is envisaged that the South African Agency for Science and Technology Advancement (SAASTA) will give effect to a national coordinating role with respect to the DST Science Engagement Framework. **STRATEGIC OBJECTIVE 7:** Entrench science engagement







# STRATEGIC OBJECTIVE 7: Entrench science engagement



3-	Strategy indicator						
	Approximate number of public reached:						
	526 797 Actual 2013-2014 average						
	972 547 Actual 2015						
	Projected						
	ProjectedProjectedProjectedProjected20162017201820192020						
	* Figures may be reviewed as additional resources become available.						

Interactions focusing on educator development and learner performance in Mathematics, Technology and Science:



# Programme 3: Research and Innovation Support and Advancement (RISA)

As the grant-making programme within the NRF, RISA translates the science and technology strategies and policies of government into initiatives that support research, researchers and the provision of world-class research infrastructure. The key function of RISA is to ensure that the country has appropriate qualified human resources and the necessary high-level infrastructure to produce knowledge that is globally competitive and can transform the socio-economic landscape of South Africa. Ultimately, RISA contributes to the creation of a vibrant NSI that is sustainable and globally relevant.

# **STRATEGIC OUTCOME:** Leading-edge research and infrastructure platforms

Access to cutting-edge research platforms is a critical component of globally competitive research outputs. In order to provide researchers with access to cutting-edge infrastructure within the economic constraints of the country, the NRF will continue to broker local and international agreements to leverage off existing and new high-end infrastructure. In addition, the NRF will ensure inter-institutional collaboration. Over the next five years the NRF will pay specific attention to the life cycle planning and maintenance of existing and new research platforms.

The NRF will contribute to relevant aspects of the infrastructure roadmap in support of the DST objectives.



## STRATEGIC OBJECTIVE 4: Establish and maintain research infrastructure and platforms





## **STRATEGIC OUTCOME:**

An internationally competitive, transformed and representative research system

**STRATEGIC OBJECTIVE 1:** Promote globally competitive research and innovation



In promoting globally competitive research and innovation, the NRF adopts the Human Capacity Development Excellence Pipeline. The success of the pipeline is entrenched in the targeted investment strategies for researchers – from undergraduate to established levels in the system – by providing support and stimulating competitiveness while pursuing excellence throughout research careers. The pipeline considers the systemic need for supervisory capacity, which is the determining factor in the productivity of a system. The pipeline includes support of established researchers as well as strategic investments such as the South African Research Chairs Initiative (SARChI), where the objective is to attract and retain leading supervisory capacity. The pipeline further addresses the need for innovative infrastructure to support globally competitive research outputs. Through strategic investment in, among others, SARChI and the Centres of Excellence (CoEs), the NRF is able to support multidisciplinary research that contributes to the exploration of innovative solutions to nationally and globally relevant issues. The various instruments encompassed in the Human Capacity Development Excellence Pipeline ensure that the NRF, through the national research facilities, and specifically RISA, meets its mandate.







Actual 2012-

2014 average

Actual 2015

9 373

Projected

2016

9715

2017

Projected Projected

2018

Projected Projected

5 4 0 7

7 0 5 7



Over the next five years to 2020, strategic investments will grow by an additional R3.6 bn. SARChI will receive R2.2 bn and CoEs R794 mil.



STRATEGIC OBJECTIVE 1: Promote globally competitive research and innovation (continued)



## Number of NRF-rated researchers from designated groups



As part of the strategy implementation, the NRF will lobby with local and international private and public sector partners to increase the investment in research, innovation and human capacity development through the creation of focused funding instruments. These instruments will be utilised to address transformation as a central theme and drive knowledge generation in critical areas of national and global priority. The organisation acts within the context of the NRF Act, which dictates that the actions of the organisation result in societal benefits. The objective of the NRF funding strategy is ultimately to maintain a balanced investment portfolio. To this end, the organisation invests in broad disciplinary categories. Over the next five years, the organisation will continue to pursue resources to increase investment in strategic knowledge areas aligned to the National Development Plan (NDP 2030), the National Research Development Plan (NRDP) and the Ten Year Innovation Plan (TYIP). The NRF responds to these through a coordinated investment strategy in priority areas.

# **STRATEGIC OBJECTIVE 2:** Enhance strategic international engagements

The NRF's robust and internationally recognised funding systems position it as a leading funding agency. The NRF uses this strategic advantage to accelerate engagements between countries to leverage tangible and intangible investment in the South African and African development agenda. In this way, the NRF will continue to participate in and promote the global knowledge economy in order to contribute to sustainable socio-economic growth on the African continent.

		Grants (R'000)	<b>SARChI</b> (R'000)	<b>CoEs</b> (R'000)	<b>Facilities</b> (R'000)				
		1 2 1 2	D FOOLOLAY						
	0040 0045		D-ECONOMY	1 40 007	1.005				
	2012 - 2015	17,695	2,844	143,997	1,295				
	2016 (Current Estimate)	9,000	1,562	40,785					
	2017-2020	41,806	7,008	187,549					
	HUMAN AND SOCIAL DYNAMICS								
С Ш	2012 - 2015	43,952	259,711	8,836					
NG.	2016 (Current Estimate)	10,500	115,266	21,837					
4	2017-2020	75,273	559,224	108,059					
H	0010 0015		100.000						
0 0	2012 - 2015 2016 (Ourrent Estimate)	190,791	1,180		128,338				
ANI		01,280	8,000		35,865				
GB	2017-2020	261,540	27,686		146,013				
	0010 0015	ENER		41.005					
	2012 - 2015 2016 (Ourset Estimate)	83,358	74,241	41,995					
	2016 (Current Estimate)	46,877	24,445	19,821					
	2017-2020	113,484	105,434	88,636					
	0010 0015		1 5 40 151						
	2012 - 2013	9,334	00,247		1,349,131				
	2016 (Current Estimate)	3,325	90,894		055,005				
	2017-2020	20,925		10	1,885,115				
	INDIGENOUS KNOWLEDGE SYSTEMS								
AS	2012 - 2013 2016 (Current Estimate)	29,904	14,490	2,000					
Ц		9,304	3,070	04.000					
Ш	2017-2020	41,020		24,000					
1AG	2012 2015	E2 902		70 062	00 669				
AN	2012 - 2013 2016 (Current Estimate)	10,092	217,301	70,903	23,000				
		12,100	00,190	106 629	10,310				
v S	2017-2020	43,730		100,030	37,004				
H	2012 - 2015	11 570	10.650	17 750					
ΪRΑ	2016 (Current Estimate)	10 100	6.062	11,700					
ö	2017-2020	71.062	27 364	/8 752					
5	2017-2020	ANTAR	CTIC RESEARCH	40,7 52					
	2012 - 2015	54,320							
	2016 (Current Estimate)	18,000							
	2017-2020	173 634							
TRAT	EGIC OBJECTIVE 2: Enhance	strategic internationa	al engagements	Strategy ind	icator				



With transformation paramount to the NRF Strategy 2020, the NRF will pursue best practice grant-making, evaluation and rating systems through a system of planning; evaluations; and reviews in support, researcher ratings; institutional and programme reviews and the assessment of funding proposals through a peer-review process and a world-class grant-making system.



Actual 2015

2016

2017

## STRATEGIC OBJECTIVE 3: Provide best practice systems in support of grant-making, reviews and evaluations

# Programme 4: National Research Facilities (excluding Astronomy)



The national research facilities provide unique and cutting-edge research platforms through a network of distributed institutions. These facilities support research of strategic importance and provide access to "big science" infrastructure to national and international researchers and research. They contribute to the NRF strategic goal of growing a representative research workforce through focused human capacity development initiatives. It is through these facilities that South Africa can compete and cooperate effectively with international counterparts in the selected strategic research areas.

The five declared national research facilities and one emerging facility (the South African Environmental Observation Network – SAEON) fall within three broad clusters according to their areas of specialisation: Biodiversity and Environmental Sciences, Nuclear Sciences and Astronomy, that are arranged in two NRF programmes.



An internationally competitive, transformed and representative research system

Over the next five years the national research facilities will continue to support cutting-edge research, innovation and human capacity development by providing domain-specific cutting-edge infrastructure. The facilities will build on their unique contributions to the global research landscape in order to establish themselves as world leaders in their domain-specific research and innovation areas. They will strive to build transformed capacity in their niche areas over the next five years and increase collaborations with higher education institutions and other scientific organisations.



STRATEGIC OBJECTIVE 1: Promote globally



Due to the unique geographic location and corresponding science agenda of the national research facilities, they are prime internationally recognised research destinations. Leveraging off this strategic advantage, the national facilities will continue to strengthen intercontinental collaboration through platform provisioning and exchange programmes in order to maximise the return on investment while accelerating globally recognised research outputs.

## STRATEGIC OBJECTIVE 2: Enhance strategic international engagements



**STRATEGIC OUTCOME:** Leading-edge research and infrastructure platforms

Access to cutting-edge research platforms is a critical component of globally competitive research outputs. The NRF will review the life cycle and maintenance plans of the national research facilities in order to ensure optimal return on investment and sustainable access to cutting-edge infrastructure to researchers. Over the next five years, the national research facilities for Nuclear Sciences, Biodiversity and Environmental Sciences will continue to expand their research agendas through critical capital injections to enhance their capability and ensure global relevance.





**STRATEGIC OBJECTIVE 4:** Establish and maintain research infrastructure and platforms



# Programme 5: National Research Facilities - Astronomy

Programme 5 caters for multiwavelength astronomy while overseeing the HartRAO and SAAO national research facilities and the SKA SA project. The DST, in collaboration with the astronomy community, has developed the National Strategy for Multiwavelength Astronomy which will be implemented through Programme 5. An Astronomy Advisory Council has been appointed to give scientific input into the execution of the Multiwavelength Strategy as aligned to the NRF objectives.



1 The higher than average achievement in 2015 was due to students from Dartmouth University who came to SAAO under a USA-funded SALT programme.

2 The significant increase in projections is due to refining of databases for tracking users of the facilities and facilities' data.

Due to the unique geographic location and corresponding science agenda of the Astronomy national research facilities, they provide an integral link in the global astronomy network. Over the next five years, the Astronomy national research facilities will strengthen their catalytic role to enhance the vibrancy of an interactive astronomy culture of shared discourse, knowledge and innovation.

#### STRATEGIC OBJECTIVE 2: Enhance strategic international engagements





# STRATEGIC OUTCOME: Leading-edge research and infrastructure platforms

The Astronomy national research facilities leverage off the geographic advantages unique to Southern Africa. As such, the research platforms offered within the programme are extensive and significant. The world-class facilities provided at HartRAO and SAAO and soon to be provided by SKA SA through the MeerKAT, are significant components of the global astronomy network. This affords South Africa a host of opportunities for collaboration, knowledge generation and human capacity development. As part of the National Strategy for Multiwavelength Astronomy, the programme will provide the DST with a strategy implementation plan, including funding and resourcing, that will support the development of a proactive funding strategy for multiwavelength astronomy. This will impact the projected investment in astronomy infrastructure post 2017.



## STRATEGIC OBJECTIVE 4: Establish and maintain research infrastructure and platforms

# 20 NRF Strategy **2020**

\*Pending final allocation

# Resourcing NRF Strategy 2020

The appropriation in terms of the Estimates of National Expenditure (ENE) forms approximately 90% of the NRF funding. The NRF receives government funding for various programmes and projects on a contractual basis, primarily from the DST. Over the five-year period to 2020, the NRF will receive approximately R4bn per annum, of which the discretionary element is less than 25%.

In executing its mandate and meeting the needs of the national system of innovation, the NRF utilises innovative instruments and mechanisms in order to grow the funding base over and above the government allocation.

# Leveraging

The NRF leverages approximately R600m through programmes like SARChI and the Africa engagements. Over the five-year period, the organisation will continue to roll out similar programmes and leveraging agreements to ensure accrued benefits to the NSI.

# Collaborations

International agreements, including agreements to provide access to high-end infrastructure at the national research facilities, have the potential to leverage significant funds for the system.

## Partnerships

Public-private partnerships and industry partnerships on a global scale have the potential to unlock significant resources. Over the next five years, the NRF will make significant efforts to extend existing and pursue new industry partnerships.

# Strategy Key Performance Indicators

INDICATORS		Actual 2012	Actual 2013	Actual 2014	Actual 2015	Proj. 2016	Proj. 2017	Proj. 2018	Proj. 2019	Proj. 2020
OUTCOME: An	internatio	nally cor	npetitive	, transfo	rmed and	l represe	ntative r	esearch	system	
STRATEGIC OBJECTIVE 1		Promote g	lobally cor	npetitive re	esearch an	d innovatio	n			
Number of NRF-funded	Black	754	790	1,008	1,235	1,543	1,739	1,960	2,193	2,438
researchers from designated groups	Female	957	1,044	1,285	1,514	1,997	2,209	2,450	2,550	2,650
Number of postgraduate	Black	4,569	5,541	6,110	7,057	9,373	9,715	10,350	10,850	11,360
groups	Female	3,774	4,557	5,186	5,976	8,075	8,265	8,700	8,990	9,280
Number of NRF-rated	Black	506	569	668	766	768	850	936	1,026	1,120
groups	Female	717	780	889	962	992	1,088	1,188	1,292	1,400
ISI publications published by the n research facilities	ational	233	271	305	369	330	350	377	390	400
STRATEGIC OBJECTIVE 2		Enhance s	trategic in	ternational	engageme	ents				
Number of active grants emanating from binational, multinational as well as agency- to-agency agreements		765	515	858	1,055	1,161	1,277	1,404	1,545	1,699
STRATEGIC OBJECTIVE 3		Provide be	est practice	e systems i	n support o	of grant-ma	aking, revie	ws and ev	aluations	
Total number of researchers rated through the NRF system		2,471	2,638	2,959	3,161	3,200	3,400	3,600	3,800	4,000
0	UTCOME	: Leading	g-edge re	search a	Ind infras	structure	platform	ns		
STRATEGIC OBJECTIVE 4 Establish and maintain research infrastructure and platforms										
Number of users of equipment funded by the NEP and NNEP programmes		0	1,651	1,682	1,700	1,800	2,000	2,100	2,200	2,300
Number of publications emanating from the use of equipment funded by the NEP and NNEP programmes		690	910	1,546	1,700	2,000	2,300	2,600	2,800	2,900
OUTCOME: A reputable and influential agen					ping the	science	and tech	nology s	ystem	
STRATEGIC OBJECTIVE 5		Grow NRF	influence,	impact and	d reputation	n				
Number of internal and external us NRF business intelligence systems	sers of the S	-	0	0	0	50	65	70	80	85
STRATEGIC OBJECTIVE 6		Optimise r	eturn on ir	vestment						
Unqualified audit report		yes	yes	yes	yes	yes	yes	yes	yes	yes
Total overheads: calculated as a percentage of total expenditure		9.8%	9.4%	7.2%	7.9%	<10%	<10%	<10%	<10%	<10%
Corporate overheads: calculated as a percentage of total expenditure		2%	2%	2%	2%	2%	<3%	<3%	<3%	<3%
OUTCOME: Scientifically literate and engaged society										
STRATEGIC OBJECTIVE 7		Entrench s	science en	gagement						
Approximate number of public reached through SAASTA's science awareness activities		0	551,408	502,186	972,547	990,000	1,040,000	1,080,000	1,080,000	1,090,000
OUTCOME: A skilled, committed and representative NRF research and technical workforce										
STRATEGIC OBJECTIVE 8		Improve ta	alent mana	gement						
Proportion of South Africans from designated groups in senior technical and managerial	Black	207	218	244	250	276	291	294	300	306
positions, including SKA (Peromnes 1 - 8)	Female	155	157	176	179	198	211	225	230	240

# Acronyms

CEO	Chief Executive Officer
CoE	Centre of Excellence
DST	Department of Science and Technology
GDP	Gross Domestic Product
GERD	Gross Expenditure on Research and Development
HartRAO	Hartebeesthoek Radio Astronomy Observatory
HCD	Human Capacity Development
HEI	Higher Education Institution
HRDS	Human Resource Development Strategy
KPI	Key Performance Indicator
MTSF	Medium Term Strategic Framework
NDP	National Development Plan
NEP	National Equipment Programme
NNEP	National Nanotechnology Equipment Programme
NRDP	National Research Development Plan
NRDS	National Research and Development Strategy
NRF	National Research Foundation
NSI	National System of Innovation
PhD	Doctor of Philosophy
R&D	Research and Development
RISA	Research and Innovation Support and Advancement
S&T	Science and Technology
SAAO	South African Astronomical Observatory
SAASTA	South African Agency for Science and Technology Advancement
SAEON	South African Environmental Observation Network
SALT	Southern African Large Telescope
SARChI	South African Research Chairs Initiative
SARIR	South African Research Infrastructure Roadmap
SKA	Square Kilometre Array
TYIP	Ten Year Innovation Plan

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