ANNUAL REPORT 2015/16

science & technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation

GENERAL INFORMATION

PUBLIC ENTITY'S GENERAL INFORMATION

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STATEMENT OF RESPONSIBILITY

To the best of my knowledge and belief, I confirm the following:

All information and amounts disclosed in the annual report are consistent with the Annual Financial Statements audited by the Auditor-General.

The annual report is complete, accurate and free from any omissions. The annual report has been prepared in accordance with the guidelines on annual reporting as issued by National Treasury.

The Annual Financial Statements (page 128) have been prepared in accordance with the GRAP standards applicable to the public entity. The accounting authority is responsible for the preparation of the Annual Financial Statements and for the judgements made on this information.

The accounting authority is responsible for establishing and implementing a system of internal control that has been designed to provide reasonable assurance as to the integrity and reliability of the performance information, the human resources information and the Annual Financial Statements.

The external auditors are engaged to express an independent opinion on the Annual Financial Statements.

In our opinion, the annual report fairly reflects the operations, the performance information, the human resources information and the financial affairs of the organisation for the financial year ended 31 March 2016.

Yours faithfully

Dr Molapo Qhobela
Chief Executive Officer
July 2016

Prof. Loyiso Nongxa
NRF Board Chairman
July 2016

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FOREWORD BY CHAIRMAN

Introduction

It is my pleasure to present the Annual Performance Report of the National Research Foundation for the 2015/16 financial year. I would like to compliment the executive on achieving the goals and majority of targets set out in the Annual Performance Plan and the NRF's Strategy 2020.

High-level overview of the NRF's strategy and the performance in the sector

March 2016 concludes the first year of implementation of the **NRF Strategy 2020**. Through the strategy 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. The funding strategies and principles of the organisation are yielding positive results in the execution and contribution of national imperatives.

The NRF Institutional Review was conducted during the reporting period with a five-year focus from 2010. The cluster-specific review panels focused on the divisions of the NRF, namely Biodiversity and Environmental Sciences; Nuclear Sciences; Astronomy; Science Engagement; and Research and Innovation Support and Advancement. An overall Synthesis Review Panel considered and produced an integrated organisational report. The Board is pleased that the overall review provides a favourable appraisal of the NRF. Consideration is being given to the review recommendations and responses will be implemented in the new financial year.

Strategic relationships

In pursuing the strategic outcome-orientated goal of contributing to *"A vibrant and globally connected national system of innovation"*, the NRF leverages off the strategic relationships it has forged, in shaping and contributing to the national research agenda, which include but are not limited to the Departments of Science and Technology and Higher Education and Training; universities; science councils; local and international corporates and global funding agencies.

Challenges faced by the NRF Board

The NRF Board has adopted a risk-based management approach to the prioritisation of interventions in order to effectively address organisational challenges. The most significant matters that the Board interrogated during the year include countering the impact of a low parliamentary grant allocation through internal reprioritisations and cost-containment measures to fund the expenditure growth demands which were beyond inflationary levels; the engagement with the DST on the possible redefinition of the organisational resource allocation principles which does not provide flexibility in funding decisions; the review of the reporting framework internal to the organisation in support of evidence-based decision-making, increased accountability and a higher degree of efficiency; addressing the transformation challenges both within and external to the organisation; and the NRF Board will oversee the implementation of the NRF Review recommendations.

The year ahead

In the year ahead the Board will place continued emphasis on the achievement of the strategic outcome-orientated goals and objectives by building on the foundation layed in the first year of the implementation of the **NRF Strategy 2020**. The Board will support the realignment and development of business systems in support of collecting and utilising business and system intelligence as a key strategic tool in optimising the impact of NRF investment in the NSI.

Over the next financial year, close attention will be paid to the continuous improvement of governance as a strategic asset of the organisation and the development of a cohesive transformation strategy that will not only address organisational representivity, but support transformation beyond representivity on a systemic level.

Acknowledgements/Appreciation

On behalf of the Board and Executive, I would like to express the appreciation of the NRF to the Minister, The Honourable Mrs Naledi Pandor for her unwavering leadership, support and willingness to engage with the NRF Board and Executive Committee. I would also like to acknowledge the Portfolio Committee on Science and Technology for their regular and constructive engagements with the NRF.

On behalf of the Board I would like to thank Dr Beverley Damonse who served as acting CEO for the period March 2015 to December 2015. To the incoming CEO of the NRF, Dr Molapo Qhobela who took up office on 1 January 2016, I wish to extend a warm word of welcome and express the Board's appreciation for his willingness to serve the NRF. To the Corporate Executive Committee go our sincere acknowledgements for their unwavering commitment to the organisation and their meaningful and pro-active engagement with the Board.

I would also like to thank my fellow board members for their conscientious attention to board matters and for bringing their diverse expertise to bear on the challenges confronting the organisation.

Conclusion

Based on the performance and outcomes of the year in review, the NRF is encouraged and looks forward to a new year of opportunities to contribute to *a vibrant and globally connected national system of innovation*.

Prof. Loyiso Nongxa
NRF Board Chairman

KAKARETŠO YA MODULASETULO

Matseno

Ke thabela go rola Pego ya Ngwaga le Ngwaga ya Pego ya Mošomo ya Motheo wa Naga wa Nyakišišo ngwageng wa ditšhelete wa 2015/16. Ke rata go reta ba bagolo ka go fihlelela maikemišetšo le bogolo bja maikemišetšo yeo e theilwego Leanong la go Šoma ga Ngwaga le Ngwaga le Mokgwa wa di-NRF wa 2020.

Kakaretšo ya maemo a godimo ya mokgwa wa NRF le go šoma karolong ye

March 2016 e fetša ngwaga wa mathomo wa go hlongwa ga *NRF Strategy 2020*. Mokgatlo wo o na le mokgwa wa go gatelela go šoma ga kemedi ya NRF le tema ya yona bjalo ka mohlomi wa pholisi ka gare ga Go Hlongwa ga Tshepedišo ya Naga. Mekgwa ya thušo ya ditšhelete le melaotheo ya mokgatlo e tliša dipoelo tše dibotse go hlomeng le go tsenyeng letsogo medirong ya naga.

Tlhahlobo ya Mokgatlo wa NRF e dirilwe nakong ya pego yeo e tšerego mengwaga e mehlano go tloga ka 2010. Tlhahlobo ya dikarolo tše di tlaletšwego e be e tsepeletše go dikarolong tša NRF e lego Mehutahuta le Thutamahlale ya tikologo; Thutamahlale ya Nuklea; Bolepi bja Dinaledi; go Tsenela tša Thutamahlale; le Nyakišišo le Tlhomo, Thekgo le Tšwelopele. Kakaretšo ya Legoro la Motswako wa Tlhahlobo e naganne le go tšweletša pego ya mohlakanelwa ya mokgatlo. Lekgotla le thabela gore tlhahlobo ka kakaretšo e nea tekolo yeo e kgahlišago ya NRF. Go elwa hloko ditšhišinyo tša tlhahlobo le dikarabelo tše di tla hlongwago ngwageng o mofsa wa ditšhelete.

Mekgwa ya Ditswalano

Gore go fihlelelwe dipoelo tše di rerilwego tša go tsenya letsogo go *"Tshepedišo e kgahlišago ya naga le e tswalanago lefaseng ka moka"*, NRF e tutuetša mekgwa ya ditswalano yeo e e hlomilego, rulaganya le go tsenya letsogo lenaneotherong la nyakišišo ya naga, leo le akaretšago Mafapha a Thutamahlale le Thekinolotši le Thuto e Phagamego le Tlwaetšo; diyunibesithi; makgotla a thutamahlale; dikemedi tša mekgatlo ya mono le ya ditšhabatšhaba le ya lefase ya thušo ya tšhelete.

Ditlhohlo tša Lekgotla la NRF

Lekgotla la NRF le hlomile mokgwa wa go laola kotsi gore le etiše pele mokgwa wa go tsena ditaba gare gore go lokišwe ka katlego ditlhohlo tša mokgatlo. Ditaba tša bohlokwa kudu tšeo lekgotla le di thomilego ngwageng di akaretša go bona kamego ya tlasana ya karolo ya palamente ka go etišwa pele ga ka gare go thekga ka ditšhelete kgolo ya ditshenyagalelo yeo e bego e le ka kua ga maemo a ditšhelete; go dirišana le DST kgonagalong yeo e ka bago gona ya tirišo ya go arolwa ga didirišwa tša mokgatlo tšeo di sa fetofetogego diphethong tša thušo ya ditšhelete; go hlahlobja ga sebopego sa pego ka mokgatlong ka go thekga bohlatse bjo bo theilwego go direng diphetho, bo okeditše go thekgwa le tekanyo e kgolo ya katlego; go lokiša ditlhohlo tša diphetogo ka gare le ka ntle ga mokgatlo; Lekgotla la NRF le tla okamela go hlongwa ga ditshwaotshwao tša Tlhahlobo ya NRF.

Ngwaga Pele ga Moo

Ngwaga pele ga moo, Lekgotla le tla dula le gatelela taba ya go fihlelela mafelelo ka mokgwa o rulagantšwego ka maikemišetšo ao a hlomilwego ka go aga motheong wo o hlomilwego ngwageng wa mathomo wa **NRF Strategy 2020**. Lekgotla le tla thekga go agwa lefsa le kgolo ya ditshepedišo tša kgwebo e le go thekga go kgoboketšwa le go dirišwa ga bokgoni bja kgwebo le tshepedišo e le sedirišwa se segolo ka maikemišetšo a go bona kamego ya peeletšo ya NRF go NSI.

Ngwageng o mofsa wa ditšhelete, šetšwe kudu kaonefatšo yeo e tšwelago pele ya pušo e le thoto ya maleba ya mokgatlo le go hlabolla phetogo ya mohlakanelwa yeo e tla swaraganago le kemedi ya mokgatlo le go thekga go fetoga mo go fetago kemedi ya tekanyo ya tshepedišo.

Temogo/Tebogo

Legatong la Lekgotla le Taolo, ke rata go leboga NRF go Tonakgolo, Mohlomphegi Mohumagadi Naledi Pandor ka baka la boetapele bja gagwe bja go tia, thekgo le go ikemišetša go kgatha tema Komiting ya Lekgotla le Taolo ya NRF. E bile ke rata go leboga Komiti ya Kgoboketšo ya Thutamahlale le Thekinolotši ka baka la go tsenelela kudu go NRF le ka tsela ya maleba.

Legatong la Lekgotla ke rata go leboga Dr Beverley Damonse yo a hlanketšego e le mothuši wa CEO lebakeng la Matšhe 2015 go ya go Disemba 2015. Go CEO e ilego ya latela ya NRF, Dr Molapo Qhobela yeo e thomilego go šoma ka di-01 tša Janaware 2016, ke rata go mo amogela ka borutho le go bolela gore Lekgotla le leboga ge a šoma ka go rata go NRF. Komiti e Kgolo ya Taolo ke re go yona re leboga ka go tšwa pelong go šoma ga yona ga yona ka thata mokgatlong wo le go tsenya letsogo ka tsela e nago le morero le e šomago Lekgotleng.

E bile ke rata go leboga bašomikanna ba lekgotla ka ge ba ile ba ela hloko kudu ditaba tša lekgotla le go nagana ka tsebo ya bona gore go rarollwe ditlhohlo tšeo mokgatlo o kopanago le tšona.

Phetho

Motheong wa go šoma le ditlamorago tša ngwaga wo o hlahlobjago, NRF e kgothaletšwa e bile e fagahlela ngwageng o mofsa wa menyetla ya go tsenya letsogo go *tshepedišong e kgahlišago le ya lefase ka moka ya go hlongwa.*

Moprofesara Loyiso Nongxa
Modulasetulo wa Lekgotla la NRF

AMAZWI KASIHLALO NGAMAFUPHI

Isethulo

Ngiyajabula ukunethulela uMbiko Wokusebenza Waminyaka Yonke kuyi-National Research Foundation wonyaka wezimali ka-2015/16. Ngithanda ukubonga umphathi ngokufinyelela imigomo nezinhloso eziningi ezisoHlelweni Lokusebenza Laminyaka Yonke Nohlelo Lomgomo Wesikhathi Eside we-NRF luka-2020.

Ukubukeza okusezingeni eliphakeme lendlela ye-NRF nokusebenza kwenkampani

U-March 2016 uphetha unyaka wokuqala wokusetshenziswa kwe-*NRF Strategy 2020*. Ngalolu hlelo inhlangano igcizelela kabusha umsebenzi wenhlangano ye-NRF nendima yayo njengolandelela ukugcinwa komthetho ngaphakathi kwe-National System of Innovation. Izindlela zokuxhasa nezimiso zenhlangano kuba nemiphumela emihle ekufezeni imigomo nasekunikeleni ezintweni ezibalulekile.

Ukubukezwa kweNhlangano ye-NRF kwenziwa phakathi nenkathi yokubika egxile eminyakeni engu-5 kusukela ngo-2010. Ukubukezwa kolwazi olubalulekile kugxile ekuhlukanisweni kwe-NRF okungukuthi Ukwehluka neSayensi Yendawo; amaSayensi Enuzi, Ezezinkanyezi, Ukuhlanganiswa KweSayensi; noCwaningo noHlelo, Ukusekela Nentuthuko. Kukho konke i-Synthesis Review Panel iyacatshangelwa futhi ikhiqizwa njengombiko ohlangene wenhlangano. IBhodi liyajabula ngokubukezwa kwazo zonke izinto okwenza ukuba i-NRF inconywe kakhulu. Kucatshangelwa ukuba kubukezwe ukutuswa nokusabela okuzosetshenziswa ngonyaka wezimali omusha.

Umfelandawonye

Ukuze sifinyelele umphumela omuhle kudingeka umgomo ozoba neqhaza *"Esimisweni sikazwelonke esihlangene nomdlandla kanye nomhlaba wonke"*, i-NRF iyazisebenzisa izindlela zomfelandawonye eyazimisa, ekulolongeni nasekunikeleni ocwaningweni lukazwelonke, okuhlanganisa kodwa okungagcini eMnyango Wesayensi Nezobuchwepheshe noWemfundo Ephakeme Nokuqeqesha; amayunivesithi; amakhansela esayensi; izinhlangano zendawo nezamazwe ngamazwe nezinhlangano ezixhasayo zomhlaba wonke.

Izinselelo IBhodi Le-NRF elibhekene nazo

IBhodi le-NRF lithathe indlela yokuphatha eyingozi ukuze lihlele izinto eziza kuqala ngenjongo yokuveza ngokuphumelelayo izinselelo zenhlangano. Izindaba ezibaluleke kakhulu ziwukuba ibhodi libuzwe imibuzo phakathi nonyaka kuhlanganise nendlela elibhekana ngayo nesibonelelo esiphansi sephalamende kuya ekuhleleni izinto eziza kuqala ngaphakathi nezindleko ukuze kukalwe izimali ezisetshenziswayo kuye ngezinto ezidingekayo ezandayo ezaba ngaphezu kwezinga lokwehla komntotho; ukuhlanganyele ne-DST ezindleleni esingazithola zokuthola izimali nezimiso ezinganikezi inkululeko yokuxhasa ngezimali; ukubukeza uhlaka lokubika ngaphakathi enhlanganweni ekusekeleni ubufakazi obusekelwe ekwenzeni izinqumo, ukwandisa ukulandisa nezinga eliphakeme lokuphumelela; ukuveza izinselelo eziguqukayo kokubili ngaphakathi nangaphandle kwenhlangano; futhi iBhodi le-NRF liyokwengamela ukusetshenziswa kwezinto ezituswe ukubukeza kwe-NRF.

Unyaka Ozayo

Onyakeni ozayo iBhodi liyoqhubeka nokugcizelela ukufinyelela imigomo nezinhloso ezihleliwe ngokwakha esisekelweni sonyaka wokuqala wokusetshenziswa kwe-**NRF Strategy 2020**. IBhodi liyosekela ukulungiswa kabusha nokuthuthukiswa kwezimiso zebhizinisi ekusekeleni ukuqoqwa nokusebenzisa ibhizinisi nesimiso sobuhlakani njengethuluzi eliyinhloko lokuba neqhaza ekutshaleni izimali kwe-NRF kuyi-NSI.

Onyakeni omusha wezimali , kuyonakwa kakhulu ukuqhubeka sithuthuka ekuphatheni impahla yenhlangano nokuthuthukisa izindlela eziguqukayo ezingeke zisize inhlangano nje kuphele ekuphumeleleni kodwa nasekusekeleni izinguquko nangale kwezinga lesimiso esivamile.

Ukubonga/Ukwazisa

Egameni leBhodi nabaPhathi, ngithanda ukubonga uNgqongqoshe we-NRF, uMhlonishwa uNkk. Naledi Pandor ngobuholi bakhe obungantengantendi, ukusekela, nokuzimisela ukuhlangana neBhodi le-NRF neKomiti Yabaphathi. Ngithanda nokubonga iKomiti Yesayensi Nezobuchwepheshe ngokuhlangana njalo nokwakhayo ne-NRF.

Egameni leBhodi, ngithanda ukubonga uDkt. Beverley Damonse owaba i-CEO kusukela ngo-March 2015 kuya ku-December 2015. Kuyi-CEO elandelayo ye-NRF, uDkt. Molapo Qhobela ongene kulesi sikhundla ngomhla ka-01 January 2016, ngifisa ukumamukela ngokufudumele futhi ngidlulisela ukubonga kweBhodi ngokuzimisela kwakhe ukusebenzela i-NRF. Sibonga ngobuqotho iKomiti Yabaphathi ngokuzibophezela kwayo okungantengantengi enhlanganweni kanye nokusebenza ngenjongo nangentshiseko neBhodi.

Ngizothanda ukubonga amalungu engikanye nawo ebhodi ngokunaka kwawo ngokucophelela izindaba ezimayelana nebhodi nangokuveza amakhono awo ahlukahlukene ukuze sibhekane nezinselele zenhlangano.

Isiphetho

Ngokusekelwe endleleni esisebenze ngayo nemiphumela yonyaka esiwubukezayo, i-NRF ikhuthazekile futhi ibheke phambili onyakeni omusha onamathuba okunikela *esimisweni sikazwelonke esihlangene nomdlandla kanye nomhlaba wonke*.

Prof. Loyiso Nongxa
Usihlalo Webhodi Le-NRF

CHIEF EXECUTIVE OFFICER'S OVERVIEW

Overview

It is my pleasure to present the Annual Report of the National Research Foundation (NRF) for the period ending 31 March 2016. The report provides the organisation's performance against the Annual Performance Plan for the year under review and highlights the organisation's response to objectives against **NRF Strategy 2020**, including our contribution to the National Development Plan 2030 (NDP).

High-level financial review of the NRF

The year under review concluded with a 34% year-on-year increase in income from R3 097m in 2014/15, to R4 162m in 2015/16. This was largely attributed to a 114% increase in ring-fenced funding received for Human Capacity Development (R357m) and the SKA SA Project (R339m) from the Department of Science and Technology (DST). Designated income decreased marginally by 3.5% due to a number of DST contracts that were transferred to the ring-fenced allocation. The NRF parliamentary grant that enables the organisation to deliver on its mandate, increased by a nominal 3%. The decline of the parliamentary grant in real terms remains a matter of concern regarding the sustainability of the organisation. The ratio between the parliamentary grant and ring-fenced/designated income is unhealthy at 25:75. In this regard, management and the Board are exploring a suitable resource allocation framework with the DST to support the long-term sustainability of the organisation. In line with Section 53(3) of the PFMA, the NRF has made a submission to the DST to retain a cash holding of R406 million to be utilised in the new financial year.

Spending trends and performance against the strategic outcome-orientated goals of the NRF

In contributing to the long-term goal of *"an internationally competitive and transformed science and technology workforce"*, the Research and Innovation Support and Advancement unit (RISA) expensed a total of R2 707m over the financial year in support of students, researchers and research across the National System of Innovation (NSI). R1 755m was invested in human capacity development (HCD), of which 67% (R815m) was invested in honours, master's and doctoral student support. For the year under review, 69% (8 980) of postgraduate students supported were black and 54% (7 032) were female. A total of 4 853 master's and 3 181 PhD students were supported.

With regard to individual researchers, a total of 31% (1 355) were black and 37% (1 610) were female. Strategic investments including SARChI and the Centres of Excellence (CoEs) amounted to 33% (R584m) of the investment in HCD. The CoEs supported an additional 1 759 postgraduate students, of which 63% were black and 53% were female. The NRF further awarded 42 new research chairs through the South African Research Chairs Initiative (SARChI). This brings the total number of SARChI chairs to 199, of which 165 were

operational as of 31 March 2016. In addition, there was an increase in the number of black and female rated researchers of 13% (98) and 6% (62) respectively for the year under review.

In terms of providing *"World-class benchmarking and grant-making systems"*, RISA expensed R2 317m in grant funding to institutions and administered 13 401 applications through the peer review process.

Towards the goal of providing *"Leading-edge research and infrastructure platforms"*, the organisation invested R251m in awarding research infrastructure grants to the universities through the National Equipment Programme (NEP) and the National Nanotechnology Equipment Programme (NNEP). The NRF contributed to the provision of infrastructure platforms by investing a further R812m in the National Research Facilities (NFs) including the SKA SA project. The National Research Facilities produced 414 ISI accredited publications over the year and maintained an annual cumulative citation impact of 1.3. The National Research Facilities including the SKA SA also supervised 569 postgraduate students. The number of international co-publications over the year was 8 838 against a target of 7 400.

In the pursuit of the goal of a *"Scientifically literate and engaged society"*, the organisation invested R179m in institutions and organisations advancing science engagement activities. Through various initiatives across the country, the organisation trained 19 410 educators and engaged with 370 624 learners. A total of 1 013 716 members of the public participated in various science engagement activities over the reporting period.

As an organisation committed to institutional transformation, and in pursuit of the goal of creating *"A representative research and technical workforce",* the NRF increased the number of black and female technical staff from designated groups, in senior technical and managerial positions. In these categories, the organisation achieved black representivity at 45% against a target of 46%, and female representivity at 32% against a target of 36%. The organisation spent a total of R101m on salaries for the period under review, which is 14% of total expenditure.

Discontinued activities/Activities to be discontinued

Discussions are being held between the Ministry of Science and Technology and the Ministry of Environmental Affairs for the possible transfer of the National Zoological Gardens of South Africa (NZG) from the NRF to the South African National Biodiversity Institute (SANBI) during the 2016/17 financial year.

Challenges experienced

The disproportionate ratio between the parliamentary grant and designated income (25:75) as well as the increased inflationary costs of operations and currency volatility remain an ongoing challenge. The risk to organisational sustainability has precipitated the need for a change in the resource allocation methodology and framework.

Audit report matters

The external audit conducted by the office of the Auditor-General of South Africa (AGSA) resulted in an unqualified audit. The organisation has regrettably declared irregular expenditure to the value of R7 580m relating to the procurement of goods and services. However, the organisation did receive the goods and/or services procured and value was derived from the incurred expenditure. The NRF has a well-established Supply Chain Management Unit that is directed by policy compliant with the relevant regulations. However, compliance with procurement regulations and directives will continue to remain an area of focus in the coming financial year. For more information refer to Note 39 of the Annual Financial Statements on page 179.

Plans for the future

The performance of the NRF during this and prior years has layed the foundation for the 2016/17 Annual Performance Plan (APP). The performance against the strategic goals and objectives confirms that the organisation has appropriately allocated resources to meet its mandate, and by design, has contributed to the NDP and the national research agenda. The immediate plans for the organisation are to continue to focus on the implementation of the **NRF Strategy 2020** and the alignment with national imperatives including the NDP 2030.

While the core baseline funding continues to be a challenge, the organisation is committed to the continued engagement and partnership with the DST and the Department of Higher Education and Training (DHET) as well as universities in order to coordinate and ensure that investments made result in maximum impact.

In addition, the NRF will continuously improve the risk and compliance modalities to ensure good governance and maintaining a 'clean audit' status while also improving financial and operational efficiencies.

Events after the reporting date

The proposed transfer of the NZG to SANBI will continue to receive greater focus post year-end.

Economic viability

The NRF remains a strong and financially viable organisation.

Acknowledgements and appreciation

I would like to express my gratitude to the Board of the NRF under the chairmanship of Professor Loyiso Nongxa for providing leadership and guidance over the past financial year. I also wish to acknowledge, with appreciation, the support of the Minister of Science and Technology, the Honourable Mrs GNM Pandor.

A special word of appreciation is due to the management and staff of the NRF under the leadership of Dr Beverley Damonse in her role as acting CEO during the majority of the year under review. While change is never easy, able leadership and a committed staff complement have yielded positive results.

Finally, I wish to express our appreciation to our partners and particularly to the academic community which we serve and who continue to contribute so generously to the support of the NRF.

Conclusion

The first year of the implementation of **NRF Strategy 2020** has proved to be a productive year with the organisation responding positively to the ongoing challenges within the NSI. The NRF will continuously strive for improvement, particularly in the effective and efficient performance against pre-determined objectives.

Dr Molapo Qhobela
Chief Executive Officer
July 2016

KAKARETŠO YA CEO

Kakaretšo

Ke thabela go nea Pego ya Ngwaga le Ngwaga ya Motheo wa Nyakišišo wa Naga (NRF) ka nako yeo e felago ka di-31 Matšhe 2016. Pego ye e nea go šoma ga mekgatlo kgahlanong le Leano la go Šoma ga Ngwaga le Ngwaga ngwageng wo o hlahlobjago le dintlha tša karabelo ya mekgatlo maikemišetšong ao a lego kgahlanong le **NRF Strategy 2020**, go akaretša go tsenya ga rena letsogo go Leano la go Hlabolla Naga la 2030 (NDP).

Tlhahlobo ya maemo a godimo ya NRF

Ngwaga wo go bolelwago ka wona o fedile ka koketšego ya ngwaga le ngwaga ya 34% ka letseno la go tloga go dimilione tše R3 097 ka 2014/15, go ya go dimilione tše R4 162 ka 2015/16. Se ke sona se dirilego gore go be le koketšego ya 114% legoreng la modikologo leo le hweditšwego bakeng sa Legoro la Tlhabollo ya Batho (R357m) le Mošomo wa SKA SA (R339m) go tšwa go Lefapha la Thutamahlale le Thekinolotši (DST). Letseno le le kgethilwego le fokotšegile kudu ka 3.5% ka baka la ditumelelano tše dintši tša DST tše di ilego tša fetišetšwa go lefelo leo le ageleditšwego ka modikologo. Tšhelete ya palamente ya NRF, yeo e holago ka ditsela tšeo mokgatlo o phethago morero wa wona, e oketšegile ka 3% e nyenyane. Go fokotšega ga tšhelete ya palamente ka melao ya maleba e dula e le pelaelo mabapi go tsepama ga mokgatlo. Palo magareng ga tšhelete ya palamente le legora la modikologo/letseno le le kgethilwego ga se ya tlwaelega ka 25:75. Tabeng ye, ba taolo le Lekgotla ba fetleka go arolwa ga kagego ya mothopo wa maleba le DST go thekga go tsepama ga nako e telele ga mokgatlo. Ka go dumelelana le karolo 53(3) ya PFMA, NRF e rometše dilo go DST gore e dule e swere tšhelete e lekanago dimilione tše R406 tšeo di tlago go dirišwa ngwageng o mofsa wa ditšhelete.

Go diriša mekgwa le go šoma kgahlanong le maikemišetšo a ditlamorago tše di rerilwego tša NRF

Ge go tsenywa letsogo maikemišetšong a nako e telele a *"phadišano ya ditšhabatšhaba le thutamahlale yeo e fetošitšwego le matla a thekinolotši,"* lekgotla la Thekgo ya Nyakišišo le go Hlongwa ga Tšwelopele (RISA) le dirišitše dimilione tše R2 707 ngwageng wa ditšhelete e le go thekga diithuti, banyakišiši le nyakišišo go kgabaganya Go Hlongwa ga Tshepedišo ya Naga (NSI). Go beeleditšwe dimilione tše R1 755 tlhabollong ya bogolo bja motho (HCD), moo 67% (dimilione tše R815) e beeleditšwego go thekga diithuti tša thuto e phagamego, e phagamego kudu le tše dingwe. Ngwageng wo go bolelwago ka wona, 69% (8 980) ya diithuti tše di alogilego tšeo di thekgilwego e be e le Bathobaso gomme 54% (7 032) e le basadi. Go thekgilwe palomoka ya dithuto tše 4 853 le diithuti tše 3 181 tša PhD.

Mabapi le nyakišišo yeo e dirilwego, palomoka ya 31% (1 355) e bile Bathobaso gomme 37% (1 610) e le basadi. Tatelano ya dipeeletšo go akaretša SARChI le Mafelo a Katlego (CoEs) a go fihla go 33% (R584m) ya peeletšo go HCD. CoEs e be e thekga diithuti tše di oketšegilego tše 1 759 ka morago ga go aloga moo 63% e bilego Bathobaso gomme 53% e le basadi. NRF e ile ya tšwela pele e nea ditulo tše difsa tše 42 tša nyakišišo ka Bathomi ba Ditulo ba Nyakišišo ba Afrika Borwa (SARChI). Se se dira gore palomoka ya ditulo tša SARCHi e be 199 gomme 165 di bile gona go tloga ka 31 March 2016.

Le gona go bile le koketšego palong ya bathobaso le banyakišiši bao ba swailwego ba basadi ba 13% (98) le 6% (62) ka go latelana ngwageng wo o hlahlobjago. Tabeng ya go nea *"tshepedišo ya leswao la lefase le tiro ya mphiwafeela"*, RISA e dirišitše dimilione tše R2 317 tšheleteng ya go hlokomela mekgatlo le go laola dikgopelo tše 13 401 ka mogato wa go hlahloba dithaka.

Maikemišetšong a go nea *"Nyakišišo yeo e laolwago le motheo wa kabo ya ditirelo"*, mokgatlo o beeleditše dimilione tše R251 go neeng nyakišišo ya kabo ya ditirelo diyunibesithing ka Lenaneo la Dithoto tša Naga (NEP) le Lenaneo la Dithoto tša Sekathekinolotši ya Naga (NNEP). NRF e tsentše letsogo kabong ya ditirelo ka go beeletša dimilione tše dingwe tše R812 ka Lefelo la Nyakišišo ya Naga (NF) le mošomo wa SKA SA. Mafelo a Nyakišišo ya Naga a tšweleditše dikgatišo tše 414 ISI tše di tsebjago ka ngwaga le go kgomarela karolo e oketšegago ya 1.3. Mafelo ao a akaretšago SKA SA a bile a hlokomela diithuti tše 569 tše di alogilego. Palo ya dikgatišo tša ditšhabatšhaba ka ngwaga e be e le 8 838 ge e bapetšwa le maikemišetšo a 7 400.

E le ge go phegelelwa maikemišetšo a *"Mokgatlo wo o rutegilego go tša thutamahlale le go šoma"*, mokgatlo o beeleditše dimilione tše R179 mekgatlong yeo e gatelago pele medirong ya thutamahlale. Ka maiteko a mehutahuta nageng, mokgatlo o tlwaeditše barutiši ba 19 410 le go dirišana le diithuti tše 370 624. Palomoka ya maloko a 1 013 716 a setšhaba a kgathile tema medirong ya mehutahuta ya thutamahlale ka nako ya go bega.

Go etša ge mokgatlo o ineetše phetogong ya lefelo, le go tsomeng maikemišetšo a go hlama *"Nyakišišo ya baemedi le bašomi ba setekginiki"* NRF e okeditše palo ya bašomi ba Bathobaso le ba basadi go tšwa dihlopheng tše di kgethilwego, maemong a godimo le a taolo. Magorong a, mokgatlo o fihleletše kemedi ya bathobaso ka 45% kgahlanong le maikemišetšo a 46%, le kemedi ya basadi ya 32% kgahlanong le maikemišetšo a 36%. Mokgatlo o dirišitše palomoka ya dimilione tše R101 megolong ya lebaka leo le hlahlobilwego leo e lego 14% ya palomoka ya ditshenyagalelo.

Mediro yeo e kgaoditšwego/Mediro yeo e tlago go kgaotšwa

Dipoledišano magareng ga Modiro wa Thutamahlale le Thekinolotši le Mediro ya Lefapha la Tikologo yeo e ka bago le phetišetšo ya Tšhemo ya Naga ya Lefelo la Diphoofolo (NZG) go tšwa go NRF ya Mokgatlo wa Naga wa Mehutahuta Afrika Borwa (SANBI) ngwageng wa ditšhelete wa 2016/17.

Ditlhohlo tše di Bilego Gona

Tlhohlo e dula e le tekanyo e sa lekalekanego ya tšhelete ya palamente le letseno le le kgethilwego (25:75) le ditshenyagalelo tše di oketšegilego tša ditirelo tša ditirišo le go se tsepame ga tšhelete. Kotsi ya go tsepama ga mokgatlo e bakile go nyakega ga go dira diphetogo go arolweng ga didirišwa tša tlwaetšo le sebopego.

Pego ya tlhahlobo e bohlokwa

Tlhahlobo ya ka ntle e dirwa ke ofisi ya Bahlahlobi ka Kakaretšo ba Afrika Borwa (AGSA) yeo e tla feleletšago ka tlhahlobo yeo e sa swanelegego. Ka maswabi mokgatlo o boletše gore go na le tirišo yeo e sego ya maleba ya tekanyo ya dimilione tše R7 578 tše di tswalanago le go hwetša ditlabakelo le ditirelo. Lega go le bjalo, mokgatlo o hweditše ditlabakelo le/goba ditirelo tše di lego gona gomme mohola o hweditšwe ditshenyagalelong tše di bilego gona. NRF e na le Mokero wa Kabo ya Taolo wo o theilwego gabotse wo o laolwago ka go dumelelana le molao wo o sepedišanago le ditaelo tša maleba. Lega go le bjalo, go dira ka go dumelelana le melao ya tirišo le tlhahlo di tla tšwela pele e le lefelo leo go tsepamišwago kgopolo go lona ngwageng o latelago wa ditšhelete. Ge o nyaka tshedimošo e

oketšegilego e ya go Ntlha 39 ya Ditatamente tša Ditšhelete tša Ngwaga le Ngwaga go letlakala 179.

Dithulaganyo tša nakong e tlago

Go šoma ga NRF ngwageng wo le yeo e latelago go theile motheo wa Leano la go Šoma ga Ngwaga le Ngwaga la 2016/17 (APP). Go šoma kgahlanong le maikemišetšo a maleba go kgonthiša gore mokgatlo o na le mo e ka bago didirišwa tše di arotšwego gore o fihlelele maikemišetšo, le ka go hlama, go tlaleleditše go NDP le lenaneothero la nyakišišo ya naga. Maano a yona nako yeo a mokgatlo ke a gore o tšwele pele o tsepeletše go hlongweng ga NRF Strategy 2020 le go nepa mešomo ya naga go akaretša le NDP 2030.

Le ge motheo o mogolo wa ditšhelete o tšwela pele e le tlhohlo, mokgatlo o ikemišeditše go tšwela pele o kgatha tema le go dirišana le DST gomme Lefapha la la Thuto e Phagamego le Tlwaetšo (DHET) le Diyunibesithi gore go dirišanwe le go kgonthišetša dipeeletšo tše di dirilwego go feleletša ka go amega kudut.

Go oketša moo, NRF e tla tšwela pele e kaonefatša kotsi le tumelelano ya mekgwa go kgonthiša gore go ba le taolo e botse le go ba le boemo bja 'tlhahlobo e hlwekilego' ge go dutše go kaonefatšwa katlego ya ditšhelete le tshepedišo.

Ditiragalo ka morago ga letšatši la go bega

Phetišetšo ye e šišinywago ya NZG go SANBI e tla dula e fiwa šedi e kgolo ge go fedile ngwaga.

Bokgoni bja ikonomi

NRF e sa dutše e le mokgatlo o maatla le wo o nago le bokgoni go tša ikonomi.

Go Lemoga le go Leboga

Ke rata go leboga Lekgotla la Board ya NRF ka tlase ga bodulasetulo bja Moprofesara Loyiso Nongxa ka baka la go nea boetapele le tlhahlo ngwageng o fetilego wa ditšhelete. Ke rata le go bolela gore re bone e bile re leboga thekgo ya Tona ya Thutamahlale le Thekinolotši, Mohlomphegi, Moh. GNM Pandor.

Re iša mantšu a kgethegilego a tebogo go balaodi le bašomi ba NRF ka tlase ga boetapele bja Dr Beverley Damonse, temeng yeo a e kgathago bjalo ka moemedi wa CEO karolong e kgolo ya ngwaga wo o hlahlobjago. Le ge go se bonolo go dira phetogo, boetapele bja maleba le kgoboketšo ya bašomi bao ba šomago ka thata go bile le mafelelo a mabotse.

Mafelelong, ke rata go bolela gore re leboga badirišani-ka-rena, kudukudu ba mokgatlo wo re o hlankelago le bao ba tšwelago pele ba tsenya letsogo kudu gore ba thekge NRF.

Phetho

Ngwaga wa mathomo wa go hlongwa ga *NRF Strategy 2020* o bontšhitše gore ke ngwaga wa tšweletšo le mokgatlo wo o arabelago gabotse ditlhohlong tše di tšwelago pele ka gare ga NSI. NRF e tla tšwela pele e katanela go kaonefatša kudukudu katlegong le go šomeng kgahlanong le maikemišetšo ao a rerilwego e sa le pele.

Dr Molapo Qhobela
Mohlankedi yo Mogolo wa Taolo
Julae 2016

AMAZWI E-CEO NGAMAFUPHI

Ngamafuphi

Ngiyajabula ukunethulela uMbiko Waminyaka Yonke we-National Research Foundation (NRF) wenkathi ephela ngezi-31 March 2016. Lo mbiko uveza indlela inhlangano esebenze ngayo ngokuvumelana noHlelo Lokusebenza Lwaminyaka Yonke lwalo nyaka obukezwayo futhi uqokomisa indlela inhlangano esabele ngayo emigomweni ye-**NRF Strategy 2020**, kuhlanganise neqhaza esilibambile kuyi-National Development Plan 2030 (NDP).

Ukubukeza okusezingeni eliphakeme le-NRF

Unyaka esiwubukezayo uphele ngokwanda kwemali engenayo ngamaphesenti angu-34 onyaka nonyaka kusukela ku-R3 097m ngo-2014/15, kuya ku-R4 162m ngo-2015/16. Lokhu kwenziwe ikakhulu ukwanda kwesiqinisekiso sokuthi imali izosetshenziswa ngemfanelo ngamaphesenti angu-114 esakuthola kuyi-Human Capacity Development (R357m) ne-SKA SA Project (R339m) kuvela eMnyango Wesayensi Nezobuchwepheshe (DST). Imali engenayo inciphe kakhulu ngamaphesenti angu-3.5 ngenxa yezivumelwano eziningana ze-DST ezaqinisekiswa ngokuthi imali izosetshenziswa ngemfanelo. Umxhaso kahulumeni we-NRF, onikeza indlela izinhlangano ezifinyelela ngayo imigomo yazo, wandile ngamaphesenti angu-3. Ukwehla komxhaso kahulumeni empeleni kuyinto ekhathazayo mayela nokuqina kwenhlangano. Isilinganiso esiphakathi komxhaso kahulumeni nesiqinisekiso sokuthi imali izosetshenziswa ngemfanelo/inzuzo eklanyiwe yimbi iku-25:75. Kule ndaba, abaphathi neBhodi basahlola indlela efanele yokuthola imali ohlakeni lwe-DST ukuze basekele ukuzinza kwenhlangano isikhathi eside. Ngokuvumelana nomthetho 53(3) we-PFMA , i-NRF iye yathumela kuyi-DST ukuze ithole imali engu-R406m ukuze isetshenziswe onyakeni omusha wezimali.

Izindlela zokusebenzisa imali nezokusebenza ziqhathaniswa nemiphumela yemigomo ye-NRF

Ekunikeleni emgomweni wesikhathi eside *"wabasebenzi abancintisanayo bomhlaba wonke nesayensi eguquliwe nezobuchwepheshe,"* i-Research and Innovation Support and Advancement unit (RISA) ichithe imali engaba ngu-R2 707m kulo nyaka wezimali ukuze isekele abafundi, abacwaningi, nocwaningo ngale kwe-National System of Innovation (NSI). Kutshalwe imali engu-R1 755m ekuthuthukiseni amakhono obuntu (HCD), engamaphesentu angu-67 (R815m) yayo yatshalwa ekusekeleni abafundi ukuba bathole iziqu, izitifiketi nabafundi abafundela ubudokotela. Kulo nyaka obukezwayo, emaphesentini angu-69 (8 980) abathola iziqu abasekelwa kwakungabaNsundu futhi amaphesenti angu-54 (7 032) kwakungabesifazane. Sebebonke bangu-4 853 abathola iziqu ze-masters futhi bangu-3 181 abathola iziqu ze-PhD abafundi abasekelwa.

Mayelana nabacwaningi ngabanye, sebebonke abangamaphesenti angu-31 (1 355) kwakungabaNsundu futhi amaphesenti angu-37 (1 610) kwakungabesifazane. Izindlela zokutshala izimali zihlanganisa i-SARChI neZikhungo Zemfundo

Eyengeziwe (CoEs) zibe ngamaphesenti angu-33 (R584m) imali eyatshalwa kuyi-HCD. Ama-CoEs asekela abafundi asebathola iziqu abengeziwe abangu-1 759 abangamaphesenti angu-63 abo kwakungabaNsundu futhi amaphesenti angu-53 kungabesifazane. I-NRF yaqhubeka iklomelisa izihlalo ezintsha ezingu-42 kuyi-South African Research Chairs Initiative (SARChI). Lokhu kusiletha engqikithini yezihlalo ze-SARCHi ezingu-199 ezingu-165 kuzo zazisebenza kusukela ngomhla ka-31 March 2016. Ngaphezu kwalokho kwaba nokwanda futhi enanini labansundu nabesifazane ababa abacwaningi amaphesenti angu-13 (98) nangu-6 (62) ngokulandelana ngonyaka esiwubukezayo. Ngokwamazwi okunikeza *"Ukuhlola kwezinga lomhlaba wonke nezimiso zokuxhasas"*, i-RISA yachitha imali engu-R2 317m ekuxhaseni izinhlangano futhi yahlola izicelo ezingu-13 401 ngenqubo yokubukeza ontanga.

Ukuya emgomweni wokunikeza *"Abacwaningi abaholayo nezinhlaka zentuthuko imali"*, inhlangano itshale imali engu-R251m ekuklomeliseni ukuxhaswa kwamayunivesithi nge-National Equipment Programme (NEP) nange-National Nanotechnology Equipment Programme (NNEP). I-NRF inikelele izinhlaka zentuthuko ngokutshala enye imali engu-R812m kuyi-National Research Facility (NF) kuhlanganise nomsebenzi we-SKA SA. I-National Research Facilities ikhiqize izincwadi ezingu-414 ze-ISI phakathi nawo wonke unyaka futhi yalondoloza ukukhiqizwa kwazo kwakhula ngo-1.3. IZindawo ezihlanganisa i-SKA SA nazo zenganyelwa abafundi asebathola iziqu abantu-569. Inani lezincwadi zomhlaba wonke zonyaka wonke zingu-8 838 kanti sasinomgomo wezingu-7 400.

Ukuze sifinyelele umgomo *"Womphakathi onolwazi lwesayensi nohlanganyelayo ezintweni"*, inhlangano itshale imali engu-R179m ezikhungweni nasezinhlanganweni ezithuthukisa imisebenzi yesayensi. Ngezindlela ezihlukahlukene ezweni lonke, inhlangano iqeqeshe abafundisi abantu-19 410 futhi yaxoxa nabafundi abangu-370 624. Esewonke angu-1 013 716 amalungu omphakathi abambe iqhaza emisbenzini ehlukahlukene yesayensi kule nkathi yokubika.

Njengenhlangano ezibophezele ezinguqukweni, futhi ephishekela umgomo wokusungula *"Ummeleli wocwaningo nomsebenzi wobuchwepheshe"* i-NRF yandise inani labasebenzi abaNsundu nabesifazane emaqenjini aklanyiwe, ezikhundleni eziphakeme zobuchwepheshe nakwezokuphatha. Kulezi zikhundla, inhlangano ifinyelele abameleli abansundu abangamaphesenti angu-45 ebesinomgomo wabangamaphesenti angu-46 kanye nabameleli abesifazane abangamaphesenti angu-32 ebesinomgomo wabangamaphesenti angu-36. Inhlangano isebenzise imali engu-R101m ekuholeleni izisebenzi ngenkathi esiyibukezayo okungamaphesenti angu-14 emali esiyisebenzisile.

Imisebenzi eyayekwa/Imisebenzi ezoyekwa

Kubanjwa izingxoxo phakathi kweNkonzo YezeSayensi Nezobuchwepheshe neNkonzo Yezindaba Zemvelo ngokuthi kungenzeka yini kudluliselwe kuyi-National Zoological Gardens (NZG) isuka kuyi-NRF iye kuyi-South African National Biodiversity Institute (SANBI) phakathi nonyaka wezimali ka-2016/17.

Izinselelo Esabhekana Nazo

Umehluko omkhulu phakathi komxhaso kahulumemi nemali eklanyiwe engenayo (25:75) kanye nokwanda kwezindleko zokusebenza namandla email kuyinselele eqhubekayo. Ingozi yokuzinza kwenhlangano kuye kwasheshisa isidingo soshinto endleleni yokuhlela izimali neyohlaka.

Izindaba Zombiko Wokubalwa Kwezimali

Ukubalwa kwezimali kwangaphandle okwenziwa ihhovisi le-Auditor General South Africa (AGSA) kube nemiphumela yokubalwa kwezimali okungafaneleki. Siyadabuka ngokuthi inhlangano ibe nokusetshenziswa kwemali okungafanele okungaba imali engu-R7 578m okuhlobene nendlela yokuthenga izimpahla nezinkonzo. Nokho, inhlangano ayizange izithole izimpahla futhi/ noma ayizenzelwanga izinkonzo ezikhokhelwe futhi inani lemali latholakala kuleyo mali eyasetshenziswa. I-NRF ingxenye ezinzile yokuPhathwa Komkhiqizo eqondiswa umthetho onezimiso ezifanele. Nokho, sizoqhubeka sigxile ekuvumelaneni nemithetho yezindlela zokuthenga neziqondiso kulo nyaka wezimali ozayo. Ukuze uthole ulwazi olwengeziwe bheka iPhuzu 39 Lwezitatimende Zezimali Zaminyaka Yonke ekhasini 179.

Izinhlelo zesikhathi esizayo

Indlela i-NRF esebenze ngayo phakathi nalo nyaka neminyaka edlule ibeke isisekelo soHlelo Lokusebenza Lwaminyaka Yonke (APP) luka-2016/17. Indlela esisebenze ngayo ngokuvumelana nemigomo nezinhloso kuqinisekisa ukuthi inhlangano inhlangano ibekele eceleni imali ukuze ihlangabezane nezimfuno zayo (mandate), futhi ngokohlelo, ibambe iqhaza kuyi-NDP nasezingxoxweni zocwaningo lukazwelonke. Izinhlelo zenhlangano zamanje ziwukuqhubeka nokugxila ekulandeleni ukusetshenziswa kwe-*NRF Strategy 2020* nokuvumelana nezindlela zikazwelonke kuhlanganise ne-NDP 2030.

Nakuba ukuxhaswa okuwumgogodla kuqhubeka kuyinselelo, inhlangano izibophezele ukuqhubeka ihlanganyela futhi ibambisene ne-DST noMnyango Wemfundo Ephakeme Nokuqeqesha (DHET) kanye namaYunivesithi ukuze ixhumanise futhi iqinisekise ukutshalwa kwezimali ukuba kube nomthelela omkhudlwana.

Ngaphezu kwalokho, i-NRF izoqhubeka inciphisa izingozi futhi ivumelane nezindlela ezivamile ukuze iqinisekise ukuphatha kahle futhi ilondoloze 'umbiko wokubalwa kwezimali omuhle' kuyilapho futhi ithuthukisa izimali nokusetshenziswa kwazo kahle.

Izenzakalo zangemva kosuku lokubika

Ukudluliselwa kwe-NZG kuyiSANBI okuhlongozwayo kuzoqhubeka kugxilwe kukho kakhulu ekupheleni kwalo nyaka.

Ukuzimela ngokomnotho

I-NRF ihlale iyinhlangano eqinile nezimele ngokwezimali.

Amazwi Okubonga Nawokwazisa

Ngizothanda ukudlulisela ukubonga kuyiBhodi ye-NRF ngaphansi kukasihlalo uProfesa Loyiso Nongxa ngokuhola nangokuqondisa phakathi nonyaka wezimali odlule. Ngifisa nokubonga nokusekelwa uNgqonqoshe Wesayensi Nezobuchwepheshe, uMhlonishwa, uNkk., GNM Pandor. Kuyafaneleka ukuba ngibonge ngokukhethekile abaphathi nabasebenzi be-NRF abaholwa uDkt. Beverley Damonse, endimeni yakhe njengobambele i-CEO phakathi nesikhathi esiningi walo nyaka obukezwayo. Nakuba ushintsho lungelula, sibonga ubuholi obuhle nabasebenzi abazibophezele okuye kwaveza imiphumela emihle.

Okokugcina, ngifisa ukudlulisela ukubonga kwethu kwesibambisene nabo futhi ikakhulu umphakathi wezemfundo esiwukhonzayo futhi oqhubeka unikela ngesandla esivulekile ekusekeleni i-NRF.

Isiphetho

Unyaka wokuqala wokusetshenziswa kwe-*NRF Strategy 2020* ubonakale uwunyaka okhiqizayo njengoba inhlangano isabele kahle ezinseleleni eziqhubekayo ngaphakathi kuyi-NSI. I-NRF izoqhubeka ilwela ukuthuthukisa ikakhulu ukuphumelela nokusebenza kahle ngokuvumelana nemigomo ehlelwe kusengaphambili.

Dkt. Molapo Qhobela
Isikhulu Esiyinhloko Sabaqondisi
July 2016

PART A:
STRATEGIC OVERVIEW

1 STRATEGIC OVERVIEW

The National Research Foundation (NRF) is a statutory body established through the National Research Foundation Act (No. 23 of 1998). As a public agency, the NRF supports the development and implementation of national strategy and policy. The organisation funds research; supports the development of high-end human capacity; and provides access to critical research infrastructure to promote knowledge production across specific disciplinary fields. The organisation promotes public science engagement to inspire a representative and globally competitive research community. Together with higher education institutions, research institutes, business, industry and international partners, the NRF acts as a catalyst for knowledge production in science and technology in order to improve the quality of life of all the people of the Republic.

1.1 NRF Strategy 2020

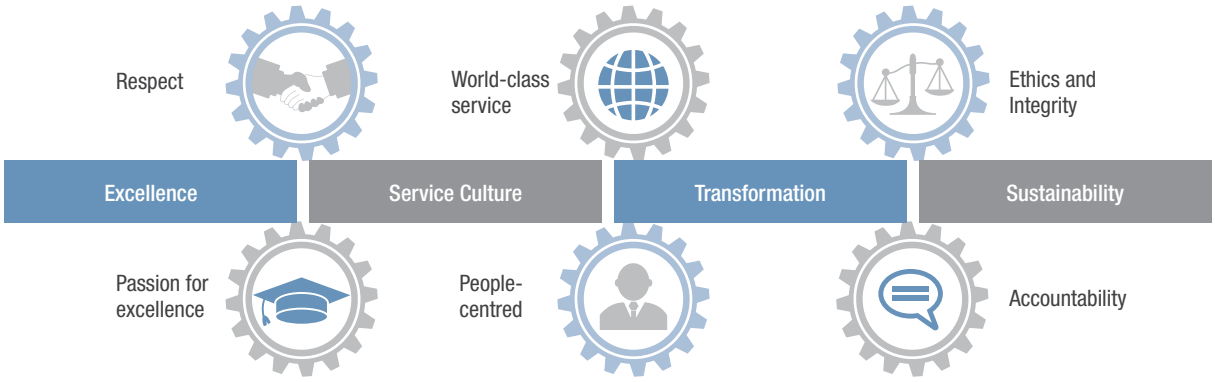
The 2015/16 financial year introduced the new NRF strategy. In **NRF Strategy 2020**, the organisation places renewed emphasis on the agency function of the NRF and its role as a policy implementer within the National System of Innovation (NSI). Playing a critical integration role across the public entities within the Science and Technology sector, the NRF as the granting agency of government has the ability to catalyse focused societally beneficial research and development in support of knowledge generation, human capacity development and innovation.

The **NRF Strategy 2020** is based on four core tenets that are interwoven into the values of the organisation and this supports the implementation plan of each strategic objective:

- Transformation;
- Excellence;
- Service Culture; and
- Sustainability.

Figure 1 is an illustration of the values and core tenets of the organisation.

Figure 1: Values of the NRF supported by the four core tenets



1.1.1 NRF vision

In its role as a policy-implementation agency, the NRF creates pertinent linkages and galvanises elements of the National System of Innovation to respond to the national priorities and international agendas in the interest of benefiting society and ensuring a better life for all the people of the Republic. The NRF vision statement is as follows:

...Catalysing knowledge production for societal benefit.

1.1.2 NRF mission

As a policy implementer and funding agency, the NRF is uniquely positioned to influence publicly funded research across the sectors and hence drive the growth of the knowledge economy. With this in mind, the organisational mission is as follows:

...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.

1.1.3 Strategic outcomes and objectives

The NRF is a diverse and complex business system that leverages off the interconnectivity of its various components. In order to demonstrate the linkage between the various strategic objectives and their contribution to the six outcomes, a system of colours has been adopted. Each strategic objective aligns to one or more of the national priorities as set out in the Medium Term Strategic Framework (MTSF) 2014 to 2019. The success of the implementation plan hinges on the core tenets of Transformation; Excellence; Service Culture; and Sustainability and the system of performance indicators as well as the selection of business intelligence indicators that support the process of tracking progress internally.

The NRF **strategic outcomes** are created to support the legislative mandate, mission and vision of the organisation. In setting out the high-level strategic outcomes in support of the NRF mandate, it is necessary to ensure that the outcomes are achieved through the careful development and alignment of appropriate **implementation objectives** and related plans.

Figures 2 and 3 set out the suite of strategic outcomes and objectives that are focused on impact across the National System of Innovation and are directly linked to the strategic objectives of the NRF.

Figure 2: Strategic outcomes of the NRF

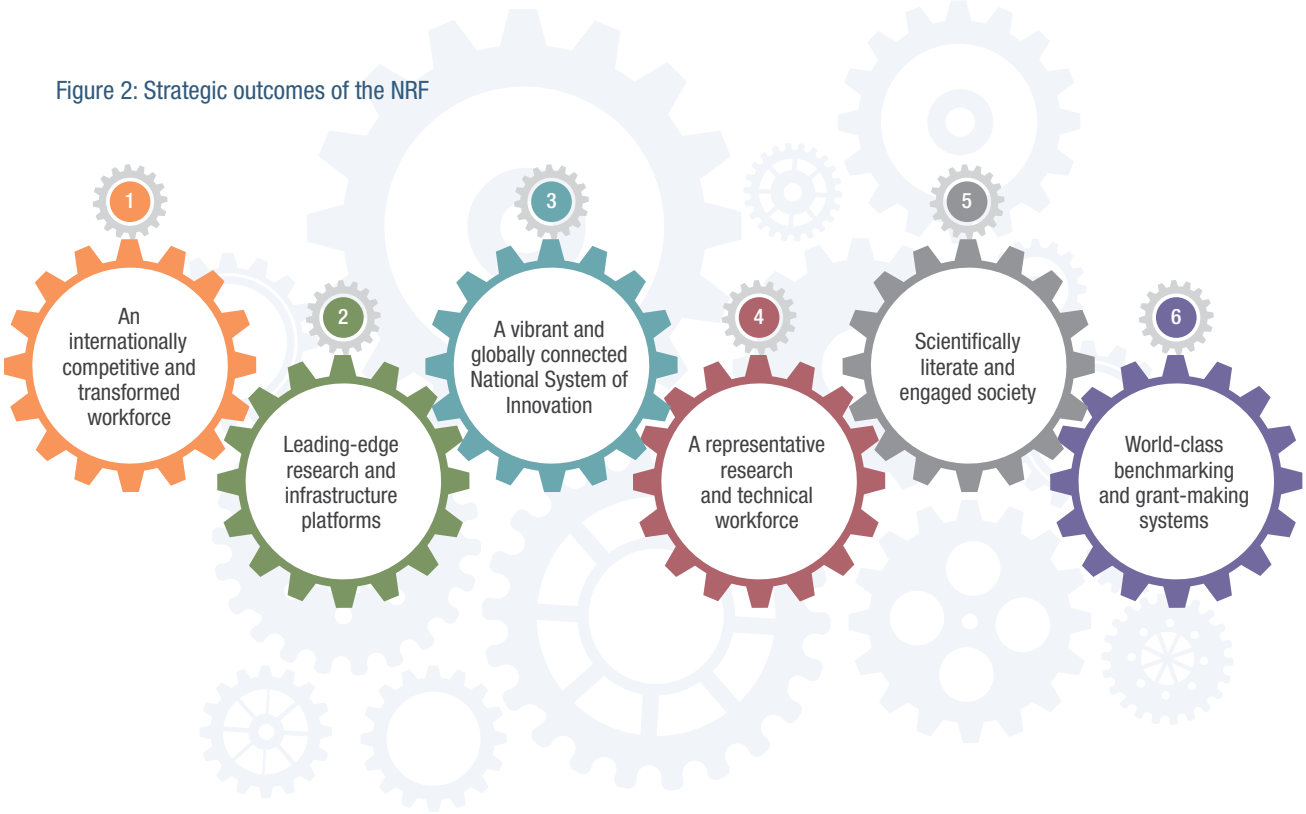


Figure 3: Strategic outcomes and objectives of the NRF

2 SITUATIONAL ANALYSIS

2.1 Mandate of the NRF

The mandate of the NRF is *"to support and promote research through funding, human resource development and the provision of the necessary research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge and thereby to contribute to the improvement of the quality of life of all the people of the Republic"*. In executing this mandate, the organisation supports the Constitutional commitment to *"improve the quality of life of all citizens and free the potential of each person"*.

The NRF also supports and promotes awareness of and engagement with science in order to improve the level of science literacy and public participation in science, technology, engineering, mathematics and innovation (STEMI).

2.2 Contributors to the NRF mandate

The NRF mandate is contextualised in terms of national priorities as set out in the National Development Plan (NDP) 2030 and the Medium Term Strategic Framework (MTSF) 2014 to 2019, as well as the strategies and policies of the Department of Science and Technology (DST), the Department of Higher Education and Training (DHET) and other government departments. The organisation also considers shifts in the global research agenda in order to ensure excellence with relevance.

2.3 Execution of the mandate

The NRF executes its mandate through a five-year strategy and implementation plan. **NRF Strategy 2020** takes cognisance of:

- The National Development Plan, as articulated through the 14 priority outcomes in the MTSF (2014 to 2019);
- Government's triple challenges of unemployment, poverty and inequality;
- National government's Nine-Point Plan;
- Emerging developments in national policy and strategy that potentially impact on the execution of the NRF mandate;
- The DST strategic objectives, plans and policies aligned to its mandate; and
- The DHET strategic objectives, plans and policies aligned to its mandate.

2.4 Risks in the delivery environment

The NRF implements a robust system of enterprise risk management (ERM) in order to ensure that the accounting authority has a balanced view of the risks and opportunities facing the organisation.

The NRF identified and treated strategic risks through the implementation of mitigation strategies as discussed briefly below:

- While the lack of coordination among the various role players within the NSI is an ongoing challenge, the NRF leveraged off its reputation and position to continue to forge lasting relationships and partnerships that support and facilitate coordinated actions in line with priorities;
- The ageing science and technology workforce results in a high percentage of research, supervisory and management staff approaching retirement age. The current workforce is also not representative of the national demographic profile. Internal to the NRF, the organisation continued to implement its succession planning and skills development programmes. Within the NSI, the NRF utilised targeted interventions to facilitate transformation through ensuring that established researchers mentor and supervise the emerging researcher cohort as a component of the larger plan of succession; and
- The increased demand for support against a limited parliamentary grant has again been managed through cost-optimisation strategies across the organisation. The organisation also adopted a system of leveraging with regard to funding instruments to ensure a maximised return on investment.

Although not under the direct control of the NRF, these risks were treated and closely monitored over the reporting period and, where feasible, the system was positively influenced by the management of the NRF.

3 LEGISLATIVE AND OTHER MANDATES

The NRF is a schedule 3A public entity in terms of the PFMA. In executing its mandate, the NRF creates employable resources, thereby contributing to addressing the triple challenges of unemployment, poverty and inequality. **Table 47 on page 120** maps the alignment of the NRF strategic goals and objectives to the 14 priority outcomes as set out in the MTSF (2014 – 2019), as well as the DST strategic outcomes applicable to the NRF.

3.1 Service delivery environment and strategic partners – the National System of Innovation (NSI)

In terms of the 1996 White Paper on Science and Technology, the NSI can be regarded as a set of functioning institutions, organisations (in the public and private sectors) and policies that interact constructively in the pursuit of a common set of social and economic goals and objectives. The NRF as a member institution of the NSI principally liaises with universities to enable and support the creation of new knowledge and human capacity development. The strategies, plans and priorities of the NRF are deliberately constructed to complement those of the DST, DHET and higher education institutions (HEIs) (to name the key proponents) in pursuit of the common goal of shaping and transforming the NSI towards the social and economic development of South Africa.

The NRF plays a dual role by acting as an agency of government and as a research performer. As an agency, the organisation is an enabler and initiator through the support of policy and strategy development and implementation in alignment with the NRF mandate. Through the National Research Facilities, by providing cutting-edge science and technology platforms, the NRF acts as a research and innovation facilitator and performer.

Further amendments to the NRF Act propose the support and coordination of the science engagement strategy across the NSI, which includes educational institutions, science councils, science centres and museums, professional associations, international partners and private business.

3.2 Policy environment

The policy environment of the NRF is influenced by applicable national strategies and department-level policies that impact on the NRF's execution of its mandate. The primary environment of the NRF is illustrated in **Figure 4**.

3.2.1 National strategies

3.2.1.1 National Development Plan 2030 (NDP)

The NDP endeavours to "… chart a new course and write a new story" for South Africa. The plan attempts to address the challenges of poverty and inequality, while ensuring that all citizens have the ability to exploit available opportunities. The key role players in the NSI, namely the DST and DHET, supported by the NRF, aim to address the challenges by:

- Increasing the number of academic staff with PhD qualifications from 43% in 2014 to 75% in 2030;
- Increasing the number of postgraduate enrolments at HEIs from 16% to 25% or more;
- Growing the number of doctoral graduates from 2 000 to 5 000 graduates per annum; and in so doing, increasing the number of PhD graduations per million of population from 38 in 2015 to 100 by 2030.

These systemic drivers have been recognised in the NRF's strategic plan, Strategy 2020, including the inherent requirement for systemic transformation and excellence.

3.2.1.2 National Research and Development Strategy (NRDS)

The NRDS articulates the need for a competitive research funding system to be built on international best practice as well as the benefits of and need for knowledge generation and innovation. The strategy identifies the priorities of human capacity development and transformation through the upliftment of designated groups, and advocates the pursuit of excellence in global terms. The NRF subscribes to and implements relevant aspects of the NRDS.

3.2.1.3 Human Resource Development Strategy (HRDS)

The HRDS recognises the need to implement a systemic strategy for human resource development in order to address the disparities in wealth and poverty through the institutionalisation of human resource development planning and implementation as well as the effective monitoring of progress against national targets.

3.2.2 Science and technology strategies and policies

3.2.2.1 Ten-Year Innovation Plan (TYIP) of 2007

The primary objective of the plan is to drive South Africa's society towards a knowledge economy by using science and technology to enhance economic growth and socio-economic development through the grand challenges.

3.2.2.2 Strategy for Human Capacity Development for Research, Innovation and Scholarships

The strategy identifies a set of interconnected objectives that aim to significantly increase national capacity in research and innovation.

3.2.2.3 DST Science Engagement Framework

The framework provides an overarching strategic context to advance science engagement in South Africa. It is intended to encourage and improve the coordination of science promotion, communication and engagement activities across the DST public entities, universities, other government departments, science councils, museums and partners outside the public sector.

3.2.2.4 South African Research Infrastructure Roadmap (SARIR)

SARIR supports strategic planning and evaluation of the need for large-scale research infrastructure in the NSI. Through the roadmap, the investment in research infrastructure will be supported by a high-level planning and evaluation that will ensure alignment to national priorities, optimise return on investment and ensure sustainability.

3.2.3 Other

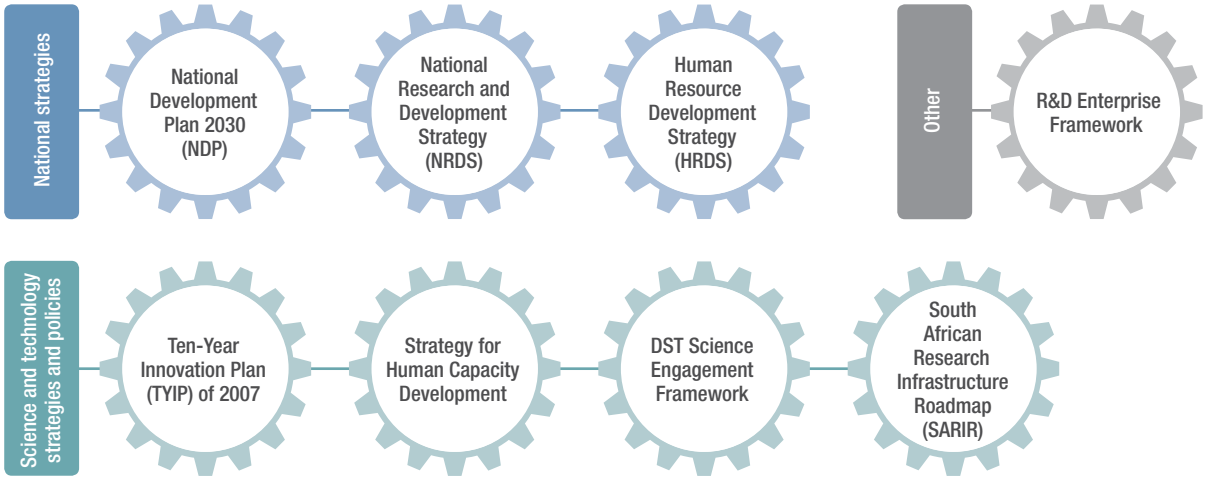
3.2.3.1 Scaling Up the R&D Enterprise Framework

The framework proposes an investment path for achieving the national science and socio-economic ambitions aligned to MTSF priority 5: a skilled and capable workforce to support an inclusive growth path. A significant increase in the investment in human capacity development at the high-end skills levels is proposed to increase the size of the active scientific workforce in the country.

3.2.4 Strategy implementation

As a recipient of public funding, the NRF must operate within the parameters set out by relevant legislation and applicable best practice. Within this structure of accountability, the NRF has organised its delivery system to ensure efficient and effective delivery of services and optimised return on investment. The NRF is committed to entrenching a culture of openness, ethical behaviour and accountability, thereby enhancing public trust and stakeholder assurance.

Figure 4: Policy environment of the NRF



3.2.5 Accountability structure

The accountability structures of the NRF include systems via which the NRF is directed, controlled and held accountable. These systems are determined by legislation including the NRF Act, the Public Finance Management Act (PFMA) (No. 29 of 1999 as amended), the National Treasury Reporting Framework, the DST Governance Framework for Public Entities and the South African Companies Act (No. 71 of 2008). In addition, the NRF adheres to the requirements of the King Report on Corporate Governance for South Africa (King III).

Parliament, through the Parliamentary Portfolio Committee (PPC) on Science and Technology, maintains high-level oversight of the entity, while the executive authority (the Minister of Science and Technology) and the accounting authority of the NRF (the NRF Board) are accountable for the entity.

Figure 5 represents the accountability structure of the NRF.

Figure 5: Accountability structure of the NRF

4 FINANCIAL OVERVIEW

A detailed statement of the NRF's financial position is provided in the annual financial statements for 2015/16. The section below provides a brief analytical overview.

4.1 Income sources

The NRF has three primary income streams and one minor source of income, as follows:

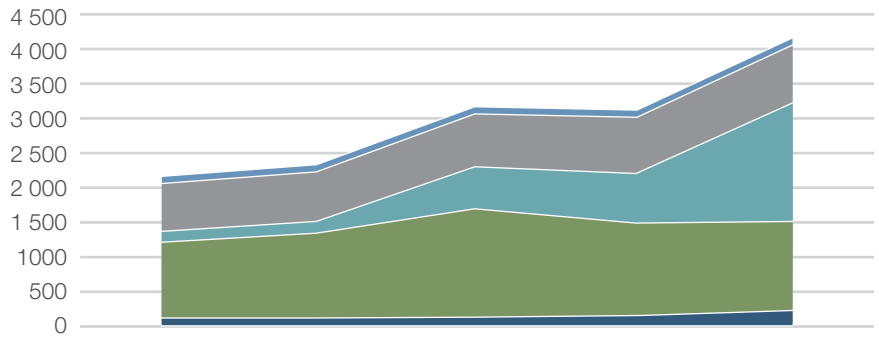
- **Parliamentary grant:** The MTEF parliamentary grant is utilised primarily to fund the programmes and operational activities of the NRF.
- **Ring-fenced funding:** Ring-fenced funding is received from the DST to fund specific projects, and thus funding can be utilised for such projects only.
- **Designated income:** Designated income represents income for specific contract funding. Such funds can only be utilised according to objectives laid down by the respective sponsors through formal contractual agreements.
- **Other income:** It is represented by interest received on funds invested and trading income for non-core business activities.

Overall, the NRF ended the year with a significant increase of 34% in income from R3 097m in 2014/15, to R4 162m in 2015/16. Details of the income trends are highlighted in **Figure 6**.

Income trend

The Parliamentary grant increased marginally by 3%. Ring-fenced funding increased from R 717m in 2014/15 to R 1,735 million in 2015/16. The increase of 142% is as a result of funding received for human capital development (R357m) and the SKA project (R339m). Designated income decreased marginally by 3.4%, due to a number of DST projects that were transferred and funded under the ring-fenced allocation, as opposed to designated contract funding historically. Other income increased mainly as a result of additional interest income, as a result of cash reserves on the SKA project, as well as more favourable interest rates.

Figure 6: NRF income trend

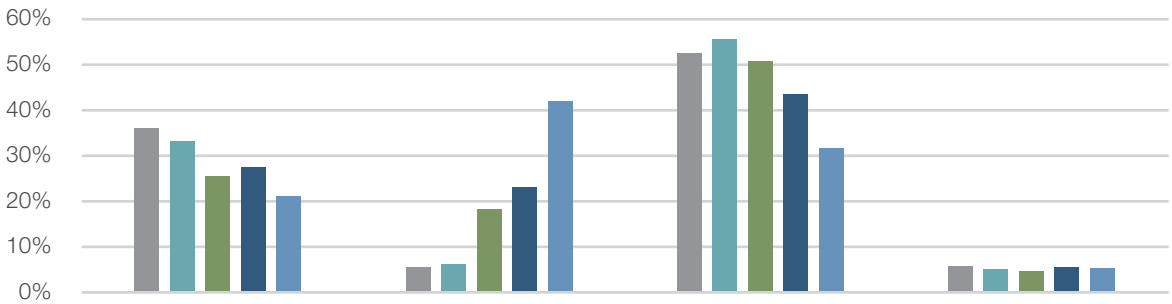


	2012	2013	2014	2015	2016
Parliamentary grant	768,944	765,573	816,203	851,286	878,399
Ring-fenced funding	126,717	152,717	596,676	717,470	1,735,687
Designated income	1,112,966	1,270,027	1,593,721	1,352,120	1,305,988
Other income	123,114	123,739	153,936	176,787	242,518
Total income	2,131,741	2,312,056	3,160,536	3,097,663	4,162,592

Income ratios

The income ratios presented in **Figure 7** reflect a declining trend in the core Parliamentary grant, while the ring-fenced funds have been increasing over time due to the transfer of certain contracts which had previously been transferred to the NRF as designated funds, now included by the DST under the ring-fenced allocation.

Figure 7: NRF income ratios



	Parliamentary grant to total income	Ring-fenced funding to total income	Designated income to total income	Other income to total income
2012	36%	6%	52%	6%
2013	33%	7%	55%	5%
2014	26%	19%	50%	5%
2015	27%	23%	44%	6%
2016	21%	42%	31%	6%

Income per business unit

The total income per business unit is shown in **Table 1**.

Table 1: Income per business unit

Programme	Business division	2014/15 R'000	2015/16 R'000
1	Corporate Support	140,768	191,618
2	South African Agency for Science and Technology Advancement	82,563	95,945
3	Research and Innovation Support and Advancement, and THRIP	1,914,950	2,695,461
4	iThemba Laboratory for Accelerator Based Sciences	218,441	248,701
4	South African Institute for Aquatic Biodiversity	26,517	35,084
4	South African Environmental Observation Network	27,841	35,940
4	National Zoological Gardens of South Africa	117,520	120,293
5	South African Astronomical Observatory	79,792	83,029
5	Hartebeesthoek Radio Astronomy Observatory	24,368	29,058
5	Square Kilometre Array project	464,903	627,463
	Total	**3,097,663**	**4,162,592**

4.2 Expenditure

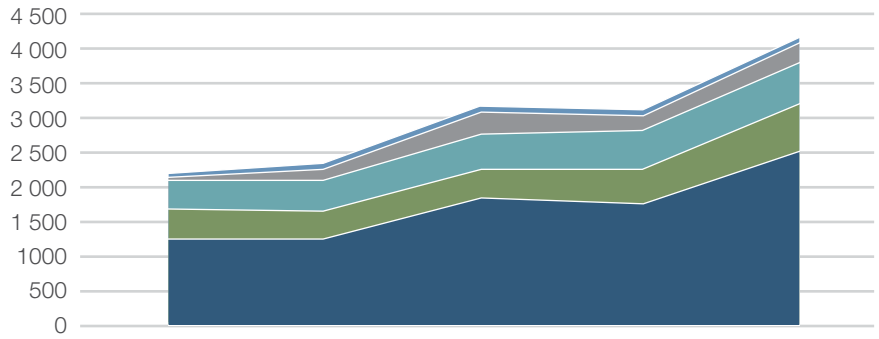
Expenditure trends

The NRF income and expenditure trends (depicted in **Figure 8**) are largely mirrored. The increase of 35% in total expenditure from R3 071m in 2014/15 to R4 145m in 2015/16, is mainly attributable to increased research funding expenditure, mainly in the following programmes:

- The Innovation Honours, Master's and Doctoral Programme (R229m);
- The SA Research Chairs Initiative (R125m);
- The incentive programmes for rated researchers (R58m);
- Competitive support – rated researchers (R63m);
- Centres of Excellence (R30m);
- HRD next-generation and emerging researchers (R 59m); and
- Scarce Skills Fund (R 54m).

In addition, the capital expenditure and operating expenditure increased due to the ramp-up of the SKA SA project in rolling out the MeerKAT, while employees' remuneration is attributed to the general salary increase.

Figure 8: Major expenditure trends per category of expense



	2012	2013	2014	2015	2016
Net capital expenditure	70,789	192,333	365,867	238,079	345,205
Employees' remuneration	400,538	434,752	473,744	532,170	577,904
Programme, operating and other expenditure	434,899	403,511	434,837	512,665	665,296
Grants and bursaries	1,282,487	1,282,177	1,863,232	1,788,421	2,556,223
Total expenditure	2,188,713	2,312,773	3,137,680	3,071,335	4,144,628

Expenditure per business unit

The expenditure (including capital expenditure) per NRF business division is presented in **Table 2**.

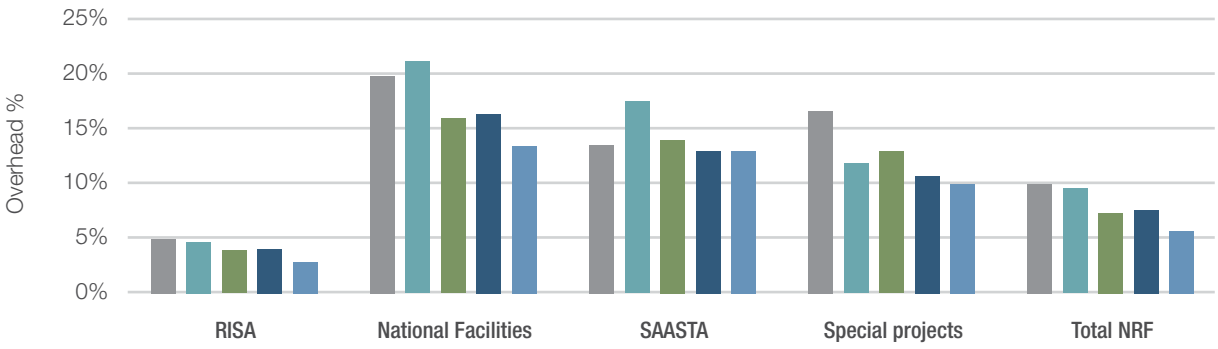
Table 2: Expenditure per business unit

Programme	Business division	2014/15 R'000	2015/16 R'000
1	Corporate Support	87,517	145,122
2	South African Agency for Science and Technology Advancement	84,905	98,781
3	Research and Innovation Support and Advancement, and THRIP	1,884,289	2,639,547
4	iThemba Laboratory for Accelerator Based Sciences	209,685	263,378
4	South African Institute for Aquatic Biodiversity	38,103	42,976
4	National Zoological Gardens of South Africa	126,496	123,989
4	South African Environmental Observation Network	43,236	54,795
5	South African Astronomical Observatory	108,755	122,357
5	Hartebeesthoek Radio Astronomy Observatory	28,652	34,193
5	Square Kilometre Array project	459,697	619,490
	Total expenditure	**3,071,335**	**4,144,628**

Overhead expenditure

The focus on cost-cutting on account of economic pressures has placed greater emphasis on the management of overheads, with overheads remaining well below 10%. The relative decrease in the overhead percentage of 2% (from 7.5% to 5.5%), is mainly due to additional ring-fenced funding received, that has been administered without an increase in the overhead structures due to economies of scale of NRF systems. This figure, on a multi-year basis, remains well within innovative system-type international benchmarks for organisations at a similar level of development. The overhead ratio is reflected in **Figure 9**.

Figure 9: NRF overhead ratio



	RISA	National Facilities	SAASTA	Special projects	Total NRF
2012	4.8%	19.8%	13.3%	16.5%	9.8%
2013	4.5%	20.9%	17.4%	11.8%	9.4%
2014	3.7%	15.8%	13.8%	12.9%	7.2%
2015	4.0%	16.2%	12.9%	10.6%	7.5%
2016	2.8%	13.4%	12.9%	9.9%	5.5%

Included in the above distribution is the corporate overhead of 1.4%.

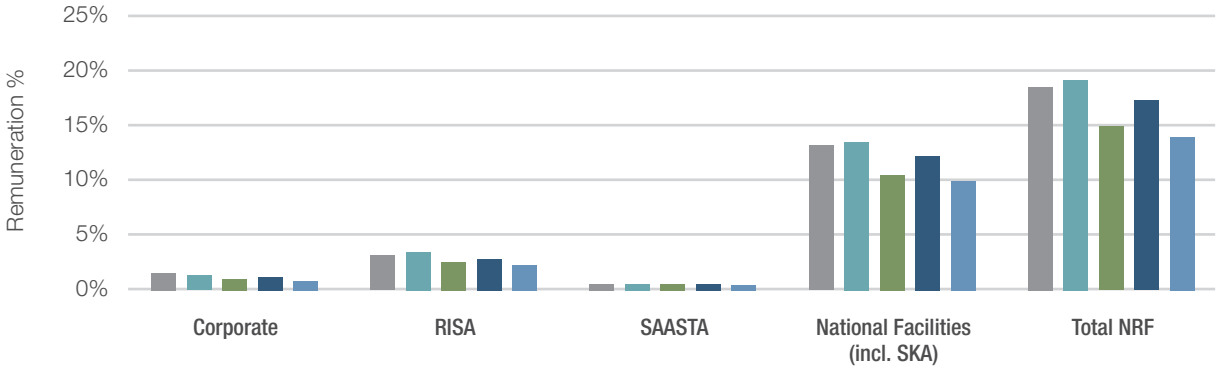
Remuneration expenditure

The NRF's highly technical and unique world-class infrastructure necessitates labour-intensive infrastructure programmes, which infrastructure acts as a catalyst within the National System of Innovation. The numerous initiatives aimed at enhancing development necessitate a baseline specialist human resource capacity, which is insourced in line with strategic sourcing to promote cost-effectiveness.

The ratio of remuneration to total expenditure of the NRF remains below 20% against the benchmark of 22% set by the NRF Board. The ratio of each programme is in line with the level of operational activity performed by each programme. The National Research Facilities have the highest ratio of remuneration expenditure due to their largely labour-intensive and insourced procurement modality, to develop and maintain research infrastructure platforms used by both local and international researchers. The ratio of remuneration to total expenditure per programmatic entity is disclosed in **Figure 10**.

The ratio of remuneration to total expenditure (excluding grant expenditure and capital expenditure) is 46% (51% for 2014/15).

Figure 10: Ratio of remuneration to total expenditure



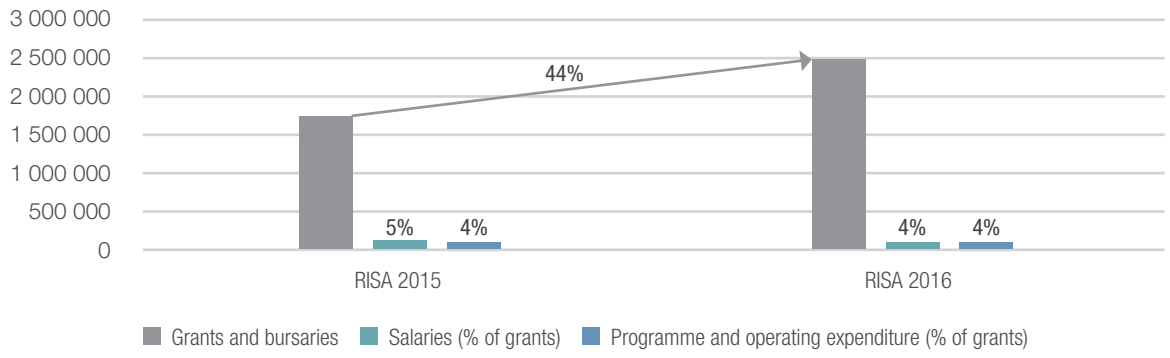
	Corporate	RISA	SAASTA	National Facilities (incl. SKA)	Total NRF
2012	1.5%	3.3%	0.6%	13.3%	18.7%
2013	1.4%	3.6%	0.6%	13.6%	19.2%
2014	1.2%	2.6%	0.6%	10.7%	15.1%
2015	1.3%	3.0%	0.7%	12.3%	17.3%
2016	1%	2%	1%	10%	14%

Grant expenditure

Approximately 96% of grant expenditure of the NRF is managed by RISA (**Figure 11**). Within RISA there was a significant increase of 44% in research funding expenditure in 2015/16, compared to 2014/15. The increase was made possible by additional ring-fenced funding received for human capital development, for bursaries and research grants, which allowed the expansion of existing bursary initiatives and other programmes, including competitive funding for researchers, Thuthuka, etc.

The increase in programme and operating expenditure of RISA (23%) is attributed mainly to increased subsistence and travel costs for reviewers due to the massive increase in volumes, panel members and travel for the DST/NRF Internship programme, as well as the impact of deteriorating exchange rates. Despite these shifts, RISA has managed to contain salaries and operating expenditure to 4% of total grants and bursaries expenditure.

Figure 11: RISA expenditure



4.3 NRF five-year financial trend

The five-year financial review as at 31 March 2016 provides a summary of financial trends for the period between 2011/12 and 2015/16 (refer **Table 3**).

Table 3: NRF five-year financial trend

FINANCIAL INDICATORS	2012 R'000	2013 R'000	2014 R'000	2015 R'000	2016 R'000
Income and expenditure					
Total income	2,131,741	2,312,056	3,160,536	3,097,663	4,162,592
Total expenditure	2,188,713	2,312,773	3,137,680	3,071,335	4,144,628
Statement of financial position					
Current assets	1,134,521	1,302,336	1,283,449	1,970,808	2,143,119
Current liabilities	1,124,909	1,444,239	1,396,432	1,969,808	2,094,018
Total assets	1,726,974	2,237,371	2,590,803	3,424,700	3,911,969
Ratio analysis					
Current ratio	1.01	0.90	0.92	1.00	1.02
Employees and interns					
Number of permanent employees	1,248	1,236	1,301	1,389	1,404

Square Kilometre Array South Africa project trial balance

The SKA SA project is managed as a special project of the NRF, on behalf of the DST, and is of international strategic scientific importance. The South African SKA pathfinder project includes the construction of the KAT7 prototype telescope array (seven antennas) and the MeerKAT radio telescope (64 antennas) in the Karoo. Once operating, MeerKAT will be the largest radio telescope in the world for many years. The abridged financial information extracted from the SKA project trial balance, as requested by National Treasury, is shown in **Table 4**.

Table 4: SKA SA trial balance

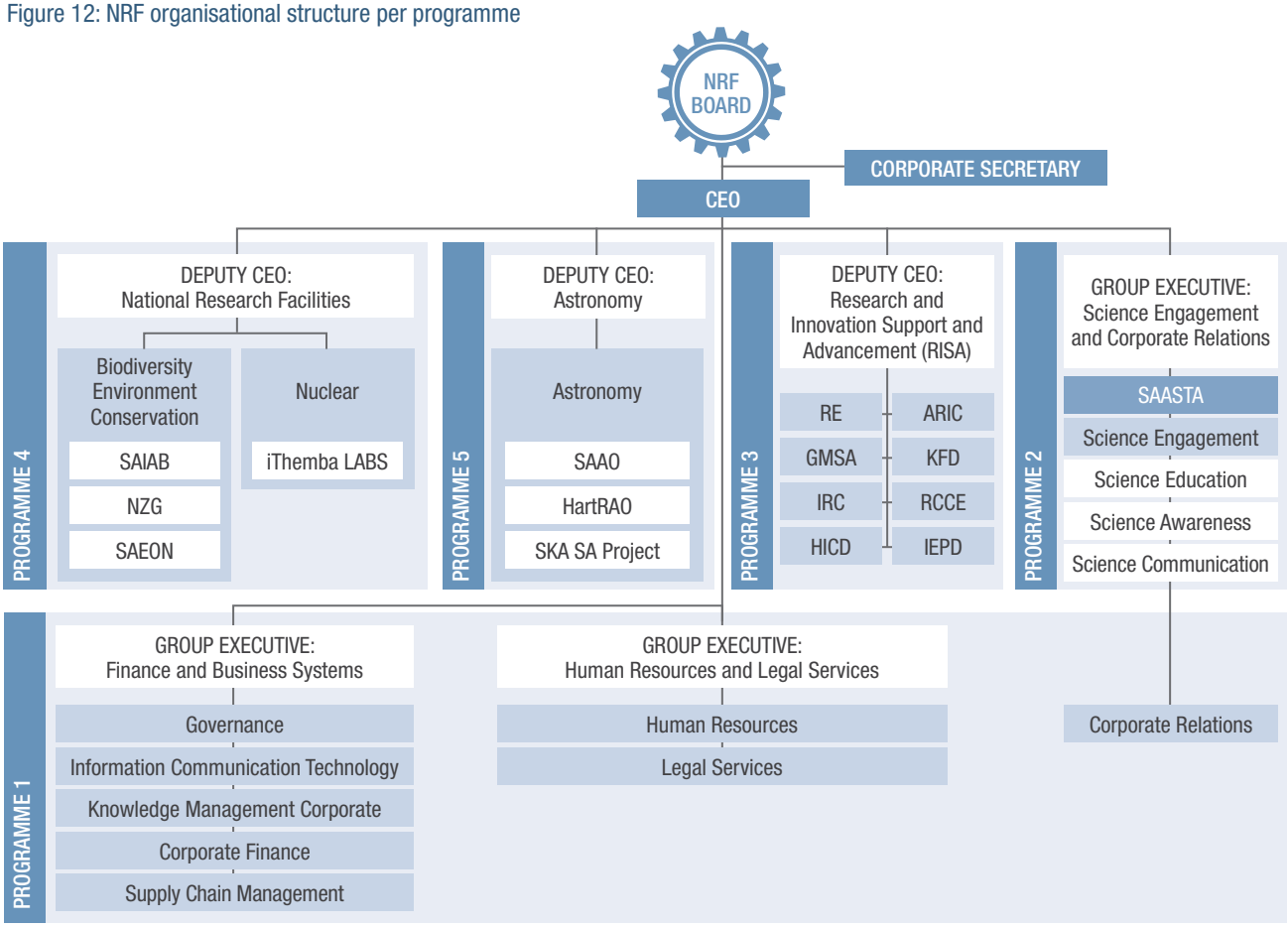
Account description	2015 R'000	2016 R'000
Income	**464,903**	**627,462**
Designated income/parliamentary grant	434,796	585,804
Sales of goods and services	173	68
Interest received	29,661	41,414
Other income	274	177
Expenditure	**256,468**	**388,152**
Employees' remuneration	75,885	100,523
Accommodation	13,474	15,279
Books and journals	432	974
Computer requisites	2,690	5,081
Conferences	736	2,966
Depreciation	35,920	41,100
Fees for services	50,391	52,385
Grants and bursaries	39,830	48,975
Insurance and licences	919	1,710
Loss on disposal of assets	129	323
Marketing	195	817
Printing and stationery	583	2,004
Purchases	3,872	6,384
Recruitment	1,356	907
Training	2,104	2,448
Refreshments (conferences and workshops)	289	609
Repairs and maintenance	5,983	68,548
Security	2,285	2,584
Travel (staff and non-staff)	13,372	20,125
Telephone and postage	1,769	1,992
Other expenses	4,255	12,418

Account description	2015 R'000	2016 R'000
Assets	**1,522,967**	**1,883,806**
Advances for capitalisation process	141,478	130,228
Cash and cash equivalents	442,177	582,927
Property and equipment	939,313	1,170,651
Cost	1,019,311	1,291,082
Buildings	68,520	68,548
Land	16,518	16,518
IT equipment	9,659	18,122
Infrastructure	326,178	326,916
Office furniture	2,611	3,339
Office equipment	6,047	6,481
Machinery and equipment	13,767	16,726
Motor vehicles	11,201	17,095
Research equipment	90,328	106,342
Capital work in progress	474,481	710,996
Accumulated depreciation	(79,998)	(120,431)
Buildings	(6,793)	(9,932)
IT equipment	(6,397)	(7,935)
Infrastructure	(12,419)	(27,088)
Office furniture	(863)	(1,188)
Office equipment	(3,134)	(3,797)
Machinery and equipment	(4,019)	(5,284)
Motor vehicles	(5,810)	(8,176)
Research equipment	(40,563)	(57,029)
Capital		
Capital fund (assets)	939,313	1,170,651
Liabilities	**583,655**	**713,155**
Trade and other payables	39,943	21,547
Designated income received in advance	532,567	669,447
Department of Science and Technology	425,507	579,969
African VLBI Network (AVN)	107,060	89,478
Accrued grants	1,003	1,141
Provision leave, bonus and savings scheme	9,759	20,807
Finance lease	383	213

5 ORGANISATIONAL STRUCTURE

The programmes of the NRF separately and collectively enable the execution of the NRF mandate. Through the Corporate Programme (Programme 1), the organisation benefits from an enabling governance structure based on the principle of shared services through business systems, policies and procedures. Programme 2 is an externally focused division that directs and coordinates science engagement, communication and education for the NRF. Through the Research Innovation Support and Advancement (RISA) division (Programme 3), the NRF executes its primary mandate of supporting research, the development of human capacity, knowledge generation and infrastructure provisioning within the NSI. The National Research Facilities and projects such as the SKA SA (Programmes 4 and 5) perform research and innovate in priority areas through a critical mass of unique skills, cutting-edge research platforms and users. The organisational structure is shown in **Figure 12**.

Figure 12: NRF organisational structure per programme



For explanations of acronyms, please refer to the list of acronyms on page 192.

PART B:
PERFORMANCE

The performance information was audited by the Auditor-General of South Africa to provide reasonable assurance in the form of an audit conclusion. The audit conclusion on the performance against predetermined objectives is included in the report to management. Refer to page 126 of the External Auditor's report, published as PART D: Annual Financial Statements.

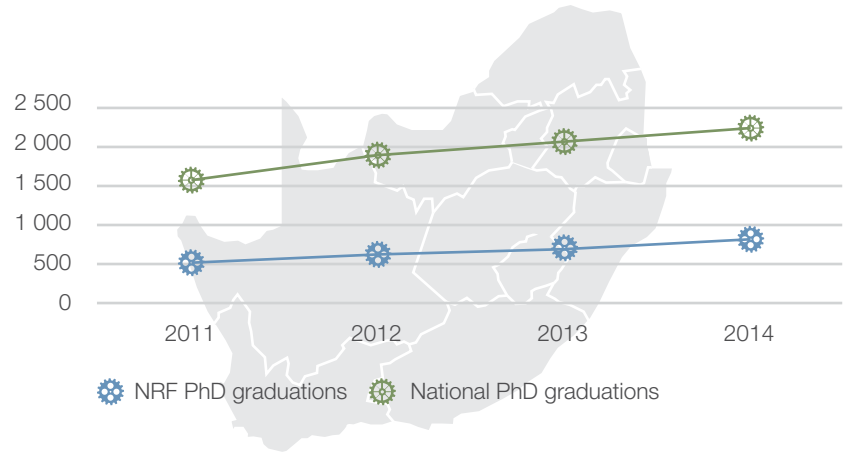
6 NRF IMPACT ON THE NSI

6.1 A coordinated response to the implementation of national priorities

The NDP identifies the PhD as a systemic driver towards a knowledge economy. Working towards achieving the system-wide NDP target of 5 000 PhD graduates per annum by 2030, the NSI must, inter alia, grow PhD qualifications amongst research and instructional staff at HEIs. To contribute to this goal, the NRF offers various career-development funding instruments. Over the past four years (2011 to 2014), the number of staff with PhD qualifications at HEIs has grown at an average rate of 7.2% year on year, with 43% of research and instructional staff having achieved a PhD qualification by 2014. The NRF has supported the growth in PhD qualifications by funding 32% of PhD graduates on average since 2011, as presented in **Figure 13**. The system produced 36 PhDs per million of population in 2014 and 41.8 PhDs/million in 2015. The NDP target of 100 PhDs per million of population by 2030 will require concerted effort and collaboration across the NSI.

In addition to the growth in PhD qualifications, the system has seen an increase in productivity. Web of Science publications by South African authors have increased by an average of 15.54% year on year since 2011. South Africa's proportion of the total Web of Science publications increased by 29% to 0.73%. NRF-funded researchers contributed 42% of the total number of Web of Science publications in the NSI. It is notable that NRF-rated researchers are the most productive in the system. Publications at the National Research Facilities (excluding astronomy) achieved an average citation impact rating of 1.25. The National Research Facilities in astronomy (including the SKA SA project) achieved an average citation impact rating of 1.33. SAAO and iThemba LABS achieved individual impact ratings of 1.42 and 1.51 respectively. South Africa is performing above the global average of 1 in many instances.

Figure 13: NRF proportion of national PhD graduations



NRF funds 32% of PhDs on average

The results of a recent scientometric analysis using the InCites dataset (Web of Science data) and the Essential Science Indicator Schema indicate that South Africa's research outputs in Space Science have grown in absolute numbers from 120 in 2006 to 382 in 2015, and that the comparative contribution to the share of world outputs has increased from 0.95% in 2006 to 2.59% in 2015. This resulted in an increase in South Africa's global ranking in astronomy from 32nd in 2006 to 24th in 2015. This increase is attributable to the national decision to prioritise astronomy and participate in "Big Science" initiatives such as SALT and the SKA SA project.

6.1.1 Funding instruments aligned to national imperatives

The NRF supports national imperatives and develops customised responses to key strategies such as the TYIP and NRDS.

6.1.1.1 National Research and Development Strategy (NRDS)

This strategy aims to maximise the pursuit of global excellence by capitalising on areas of geographic and knowledge advantage through research, researcher development and knowledge generation. The areas of advantage are identified as:

- Palaeosciences;
- Antarctic research;
- Indigenous knowledge systems related to Southern Africa;
- Biodiversity; and
- Astronomy.

Investment in the geographic and knowledge advantage areas (excluding astronomy): The NRF invested R751m over the five-year period. Six research chairs and five CoEs were established in the areas of human palaeontology, indigenous knowledge systems (IKS) and biodiversity. During the reporting period, 202 researchers were funded and 571 students were supported through grantholder-linked bursaries in these areas. Of the total students, 51% were black and 54% were female.

Investment in astronomy: Over the reporting period, R131m was invested in SAAO and HartRAO, bringing the total investment since 2011/12 to R581m. Infrastructure investment in the SKA SA project amounted to R1.58bn over the five-year period. Human capacity development (HCD) investment in the 12 astronomy research chairs, support of the National Astronomy and Space Science Programme (NASSP), and HCD for the Multiwavelength Astronomy Programme amounted to R136m over the five-year period.

6.1.1.2 Ten-Year Innovation Plan (TYIP)

The key principles of the plan are to support strategic decision-making, promote competitive advantage, create critical mass and ensure sustainable R&D scale-up. The DST identified five grand challenges namely:

- Bio-economy;
- Energy security;
- Global change;
- Human and social dynamics; and
- Astronomy.

Investment in DST grand challenges for the period 2011/12 to 2015/16 amounted to R1.12bn (excluding Astronomy). Investment for the 2015/16 financial year was R418m. Ten centres of excellence (CoEs) were established, and to date 13 research chairs have been awarded in the areas of bio-economy, energy security and global change. During the reporting period, 179 researchers were funded and 1 119 students were supported through grantholder-linked bursaries in these areas. Of the total students, 65% were black and 54% female. iThemba LABS contributes to Energy Security in the nuclear and renewable energy sectors and the strengthening of the bio-economy. The facility runs the MANuS/MatSci programme with the University of the Western Cape (UWC) and the University of Zululand (UniZul). Graduates from this programme will contribute to supplying much-needed human resources for the new nuclear energy build, which is a national area of emphasis.

The NRF responds to the NRDS, the TYIP and other priorities through a coordinated approach to knowledge generation, the development of human capacity, and the provision of cutting-edge research platforms in priority areas. The following is a summary of the organisation's response through the various collaboration initiatives, projects and funding instruments.

Table 5: Examples of the NRF's contribution to the grand challenges, the geographic advantage areas and other strategic areas

DST Grand Challenges	Bio-economy	Energy Security	Global Change	Human and Social Dynamics
Rand million	41.07, 40.58, 41.61, 44.16, 53.37	12.13, 34.98, 69.67, 66.66, 88.92	56.99, 99.67, 91.97, 98.22, 103.58	36.88, 60.76, 88.14, 126.71, 172.48
Grants	Drug Discovery Programme (including FSATI) Marine and Coastal Management (MCM) National Bioinformatics Network (NBN)	Energy Bursaries South African Nuclear Human Asset and Research Programme (SANHARP) Energy Efficiency and Renewable Energy Energy Spokes Energy Hub Joint Institute for Nuclear Research (JINR) SA South Korea	Inkaba yeAfrica Global Change Research Plan (GCRP)	Community-University Partnership Programme: Community-based Assessment Project Human and Social Dynamics Community Engagement with Science
SARChI	Bio-economy Research Chair	Planned Energy Research Chairs Planned Hydrogen Fuel Cells Research Chairs Existing Energy Research Chairs	Global Change Research Chairs	Social Sciences and Humanities Research Chairs Mathematics Education Research Chairs (FirstRand)
CoEs	Biomedical Tuberculosis Tree Health Biotechnology Epidemiological Modelling Invasion Biology Birds as Key Indicators of Biodiversity	Catalysis Integrated Mineral and Energy Resources Analysis		Food Security Human Development
National Research Facilities	International Barcode of Life (iBOL)	MANuS and MatSci Environmental Isotope Laboratory Accelerator Mass Spectroscopy (AMS) Unit	Long-term Environmental Observation	

2011/12 2012/13 2013/14 2014/15 2015/16

	Grand Challenge	Geographic Advantage			
	Geographic Advantage	Astronomy	Human Palaeontology	Indigenous Knowledge Systems (IKS)	Biodiversity	Antarctic research
Rand million	403, 541, 572, 572, 659	8.2, 9.0, 18.6, 37.1, 28.5	8.9, 10.0, 11.9, 14.8, 20.9	83.7, 90.6, 93.8, 107.1, 134.7	12.8, 15.0, 10.7, 15.8, 18.6
Grants	Multiwavelength Astronomy (MWLA) International Astronomy Partnerships: - China - India - JIVE - Netherlands - United Kingdom - USA	African Origins Programme (AOP) Palaeontological Scientific Trust (PAST)	IKS Research Grants IKS Development Grant	Bioinformatics Functional Genomics Collaboration with South African Network for Coastal and Oceanic Research (SANCOR) Marine and Coastal Management (MCM) Society, Ecosystems and Change South African Biosystematics Initiative (SABI)	South African National Antarctic Programme (SANAP)
SARChI	Astronomy and Space Science Research Chairs	Paleo Research Chair	IKS Research Chairs	Biodiversity Research Chairs	
CoEs		Palaeoscience	IKS	Invasion Biology Birds as Biodiversity Indicators Tree Health	
National Research Facilities	Space Geodesy Square Kilometre Array (KAT 7 and MeerKAT) Southern African Large Telescope (SALT) SAAO excluding SALT National Astronomy and Space Science Programme (NASSP) HCD for Multiwavelength Astronomy (MWLA)				iBOL African Coelacanth Ecosystem Programme (ACEP) Wildlife Biological Resource Centre (wBRC)

2011/12 2012/13 2013/14 2014/15 2015/16

PROGRAMME 1

7 PROGRAMME 1: CORPORATE

SITUATIONAL ANALYSIS

The Corporate Programme is a cross-cutting support function responsible for providing enabling systems and structures that support the organisation. The Programme is premised on a shared services model that sets the tone and direction for good governance, policy direction and statutory compliance.

The Programme is underpinned by fair and transparent business practices and the responsibility to drive organisational level compliance, through a system of policies and legislative frameworks.

OPERATIONAL DIVISIONS

Finance and Business Systems	Human Resources and Legal Services	Corporate Relations
This division supports the organisation through the interpretation and application of legislation and best practice; and the creation and support of enabling business systems, policies and procedures.	This function provides the NRF with comprehensive HR management, legal advisory and contract management services.	Corporate Relations facilitates both internal and external communications, brand building and stakeholder relations, and is a key enabler of the science engagement strategy.

PERFORMANCE

Programme 1 is mandated to:

- Promote good governance as a strategic asset;
- Provide leading-edge ICT systems; and
- Provide effective combined assurance.

7.1 Performance against Objective 5: Provide cost-effective shared services

7.1.1 Promote good governance as a strategic asset

7.1.1.1 Corporate governance

An effective governance function has been established and supports the compliance and control environment of the organisation. Through the combined assurance framework, the function provided the Corporate Executive Committee and the Board with an overarching view of the organisation's compliance and performance.

Adopting governance as a strategic asset has ensured that the organisation complies with all relevant legal requirements, including ethical decision-making. The NRF, as a public organisation, recognises the critical importance of a firm compliance universe and adheres stringently to all requirements.

During the year under review, the Safety, Health, Environment and Risk (SHER) Management, Internal Audit and Performance Planning and Reporting units supported the organisation in executing its mandate and responsibility. Detailed performance information is contained in **Section 13** of this document.

7.1.2 Provide cutting-edge research and technology platforms

7.1.2.1 Information and communications technology (ICT)

ICT is central to a cost- and time-efficient business. The NRF's ICT solutions enable internal operations whilst supporting good governance and risk management principles.

Over the reporting period, the ICT system availability remained at 98% despite two major incidents. During the third quarter, the Data Centre suffered a service outage caused by a power surge that occurred during the connection of the new UPS. This resulted in the NRF having limited services over a weekend owing to equipment failure. In October 2015, the optic fibre and telephone cables were severed during excavation for the building site at the head office in Pretoria. Services were recovered within 24 hours. In both instances, the business continuity management plans were used. Additional redundancy in the form of wireless internet connectivity has been planned between the NRF and the TENET hub at the CSIR. The link will be completed in the new financial year.

7.1.3 Provide effective combined assurance

7.1.3.1 Corporate finance and supply chain management (SCM)

Corporate Finance ensures management and in some instances control of the financial processes of the organisation through the implementation of efficient and effective business systems, management accounting processes and policies, and statutory reporting services. To ensure compliance with legislation and in line with the NRF's cost-optimisation strategy, SCM has been identified as a strategic priority. Corporate SCM assists in ensuring that supply chain management processes adhere to international best practice, legislation and internal control.

In accordance with the PFMA and National Treasury regulations, the organisation maintains an appropriate procurement and provisioning system, which is fair, equitable, transparent, competitive and cost-effective. Over the reporting period, the Bid Award Committee (BAC) considered 37 deviations totalling R131.79m, six ratifications, 60 recommendations totalling R239m, and 49 specifications.

All required financial reporting was completed and submitted timeously. For detailed financial information, please refer to **Part D on page 122** of this report.

7.1.3.2 Knowledge management

In order to support and maintain a knowledge-based organisation that promotes and supports quality knowledge generation, the NRF provides a knowledge management environment to internal and external stakeholders. Information is stored, managed and shared in line with legislation and global best practice. Records and document management services were provided during the period under review. The NRF also finalised the consolidation of the databases, e-tools and journal subscriptions across the organisation. The centralisation of the administration of resources will result in relief of the compliance and administrative burden at business unit level, and marginal actual cost savings could be negotiated.

7.2 Performance against Objective 4: Grow NRF impact, influence and reputation

- Provide system intelligence that informs strategy and policy;
- Communicate science and research achievements (including 'Mzansi for Science');
- Build NRF brand through partnerships and service excellence; and
- Leverage off the NRF reputation through strategic public–private partnerships.

7.2.1 Provide system intelligence that informs strategy and policy

Business intelligence (BI) is a set of techniques and tools for the acquisition and transformation of data into meaningful and useful information for business analysis purposes. The NRF provides high-fidelity, auditable data through customised business intelligence platforms to support the organisation and its stakeholders through evidence-based decision-making and strategic planning processes.

Over the reporting period, the NRF BI unit focused on the finalisation and roll-out of the NRF Business Intelligence System (BIS). The system capability exceeds the static reporting requirements related to performance reporting. Through an integrated approach between the NRF BIS and the Research Information Management System (RIMS) data, augmented by the high-level Higher Education Management Information System (HEMIS), the NRF can now provide system-level intelligence, thereby improving strategic insight and decision support across the NSI.

7.2.2 Communicate science and research achievements

The success of the NRF in contributing towards building a knowledge-intensive economy rests on, among other things, the organisation's ability to position science and technology positively in the hearts and minds of all South Africans.

The NRF, through a centralised Corporate Communications unit, facilitates internal and external communication services aimed at creating favourable engagements with stakeholders, and disseminating information about South Africa's science and scientists to the broader population. The NRF will play a pivotal role in executing the system-wide initiative to support the science and society mandate through the 'Mzansi for Science' communication campaign.

7.2.2.1 Science engagement

The NRF hosts public lectures by researchers who are recipients of NRF funding. These are researchers and scientists who, through their research, are exploring subjects of societal relevance. In addition, NRF social media platforms are used to share and communicate interesting science stories and achievements to the public at large.

During the reporting period, six lecture series were brokered with SAfm. These lectures, with topics ranging from economic geology research to HIV and water management, have been presented and broadcast live. The broadcast exposure is estimated at just under R1m in financial terms.

7.2.3 Build the NRF brand through partnerships and service excellence

In order to remain competitive and leverage off its reputation, the NRF continuously improves its service and value offerings within the NSI. This brand value is promoted and communicated on multi-media platforms – both internally and externally as well as at exhibitions and events. A number of brand-building opportunities were exploited during the reporting period to showcase a variety of the NRF business units, researchers and activities.

The NRF adopted a coordinated approach to social media, specifically Twitter and Facebook. Twitter followers grew significantly to 1 333 during the year, and Facebook followers grew to 3 543. A total of 209 104 visitors accessed the NRF website in the 2015/16 financial year, compared to 149 772 in the 2014/15 financial year.

7.2.4 Leverage off the NRF reputation through strategic public–private partnerships

By providing business intelligence systems and protocols to ensure informed decision-making in the organisation, and effectively communicating science achievements to the broader public, the NRF has established a brand identity. The organisation is able to leverage off its brand awareness and enter into strategic partnerships with public and private entities, both locally and internationally, to the benefit of NRF grant recipients.

Table 6: Programme 1 key performance indicators against budget – 2015/16: Objectives 4 and 5

A vibrant and globally connected national system of innovation

STRATEGIC OBJECTIVE 4 → Grow NRF influence, impact and reputation

Objective Statement: Contribute to building the NRF brand through the provision of consistently excellent customer-centric service offerings.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
(Number of) Multimedia coverage items	82	125	52%	The launch of CAPRISA was attended by the Nobel laureate who identified HIV. Her presence generated public and media interest resulting in additional coverage. In addition the launch events of the Women lead SARChI Chairs and the DST-NRF critical thought flagship project at UWC attracted media interest, further increased by the attendance of Minister Pandor. The Astronomy town meetings also generated unanticipated coverage due to announcements made at the event.
Customer-satisfaction rating (NRF) – GMSA Customer Service				Instrument being developed.

Budget (Rm)	Annual Budget	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Corporate Relations	6.35	10.53	-4.18	The variance is due to the 'Mzansi for Science' project, which was not budgeted for in 2015/16. This project is funded from 2014/15 unspent funds and 2015/16 strategic funds approved by the Corporate Executive Committee.

A vibrant and globally connected national system of innovation

STRATEGIC OBJECTIVE 5 → Provide support service

Objective Statement: Design and implement customised enabling support systems based on compliance.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Unqualified audit report and number of internal and external audit findings	Yes	Yes	Yes	
Investment in ICT platforms (Rm)	72.23	69.52	-4%	The underspend is due to RISA VMware licence renewal payments that have been postponed to the next financial year.
Corporate overheads: calculated as a percentage of total expenditure	<3%	1.4%	53%	The reduced overhead ratio is due to additional MTEF ring-fenced funds for bursaries (R257m) and research (R100m) that were received and have been administered without an increase in the overhead structures.

Budget (Rm)	Annual Budget	Actual	Variance	SUMMARY COMMENT ON VARIANCE
NRF Corporate	132.99	131.35	-1.36	The variance is mainly due to the delay in the appointment of the CEO and several vacancies across Programme 1.

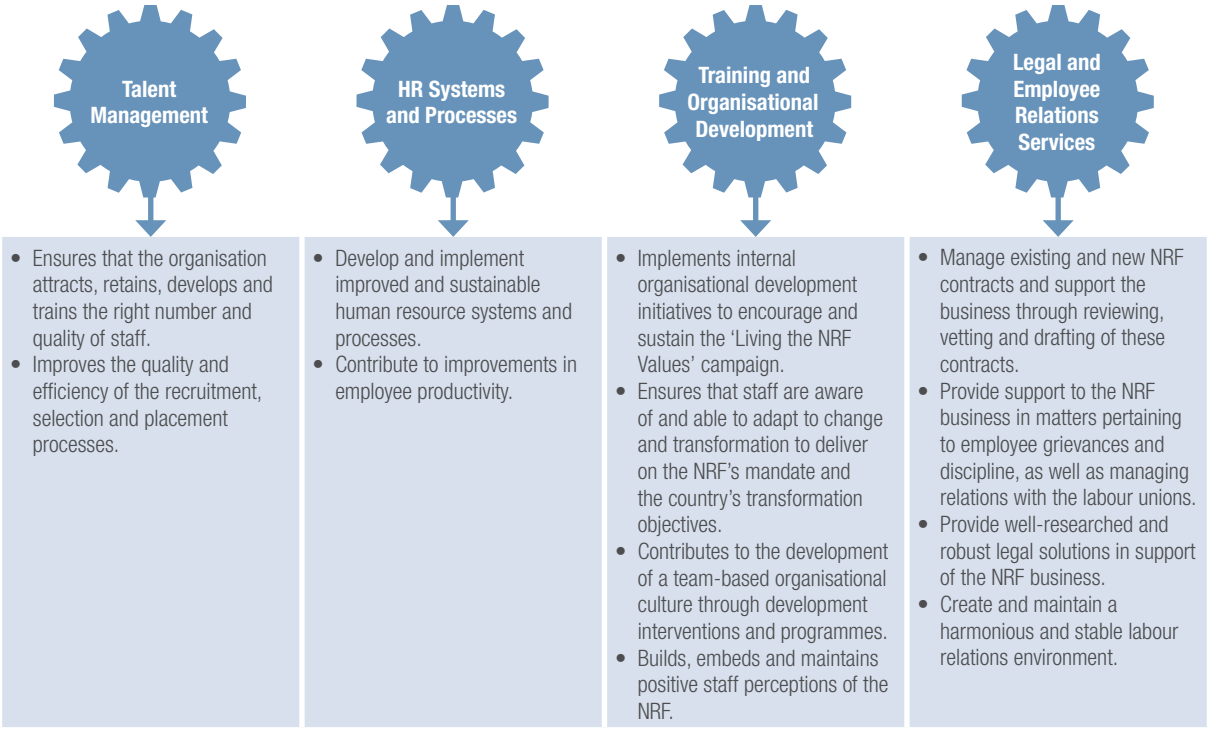
7.3 Performance against Objective 6: A representative NRF research and technical workforce

7.3.1 Human Resources and Legal Services

The Human Resources and Legal Services functions provide policy direction and strategy execution guidelines in these areas. Furthermore, the division leads, promotes and coordinates organisation-wide activities to enhance the NRF's productivity and interactions with internal and relevant external stakeholders.

As a corporate function, the scope of the directorate cuts across all NRF divisions. In discharging its mandate, the function is supported and assisted by NRF divisions.

Figure 14: Human Resources and Legal Services activities



Please refer to Section 14 (page 109) for detailed tables pertaining to the performance discussion below.

7.3.1.1 Employment equity and organisational transformation

The NRF Employment Equity Plan is at the core of the NRF's commitment to employment equity at all occupation levels. This gives effect to the NRF Employment Equity and Redress Policy, which sets out the measures to be taken to ensure legal compliance with the Employment Equity Act (No. 55 of 1998). It includes the objectives, activities, numerical goals and targets to move progressively towards achieving representivity of the designated groups across the organisational structure.

Progress towards achieving the long-term employment equity targets continues at a steady pace. In the period under review, the overall representation of black staff stands at 73% against a target of 76%. A target of 43% for female representation was achieved during the reporting period. Key challenges that remain are gender representation at executive and senior management levels, and that of blacks in the three highest employment categories.

Improve and maintain harmony between staff, management and labour

The labour relations climate in the organisation continues to be generally stable. Whilst challenges exist in some business divisions where greater investment in relationship-building is still required, good progress has been made to date with no adverse incidents of grievances and disputes having been experienced. Union membership in the organisation remains steady, with overall union representation showing a slight increase from 45.64% to 47.68%.

Staff recruitment and turnover

In the period under review, a total of 148 terminations occurred and 191 vacancies were filled. The annual staff turnover stands at 10.5%. This includes the transfer of staff from the ICSU Regional Office for Africa to the Academy of Science of South Africa (ASSAf), as well as retirements and deaths. Controllable staff turnover calculated only on terminations and resignations amounted to 7.1% in real terms.

A vacancy control system has been developed and automated to monitor and improve recruitment efficiency. As part of the talent-sourcing strategy, NRF LinkedIn and other social media accounts were opened and are used as an additional platform to enhance the recruitment process. The recruitment turnaround time was reduced from over 90 days to around 80 days on average.

7.3.1.2 Training and development

Training and development is a priority at the NRF. A Workplace Skills Plan (WSP) that addresses both functional and support skills needs across business units is in place and is registered with the Education, Training and Development Practices Sector Education and Training Authority (ETDP SETA). The focus of the corporate training and development programmes in the last quarter of the year was to fast-track high-impact activities such as WSP compliance, the commencement of the RISA competency development interventions, and phase II of the diversity management programme. The training benefited a total of 1 404 employees across various NRF business units.

The customised one-year Management and New Managers' Development Programmes (MDP and NMDP), designed in collaboration with the University of Stellenbosch Business School Executive Development (USB-ED) programme, concluded its final year of roll-out, with the last 30 candidates graduating in the period under review. The programme has been reviewed by a panel of experts, who put forward a number of suggestions and recommendations to improve the intervention in future. A total of 90 NRF employees participated in the programme in the last three years.

7.3.1.3 Legal Services

Corporate Legal Services and Industrial Relations (CLS & IR) incorporates the Intellectual Property (IP) Management Unit, and provides the NRF with a range of legal, employee relations and intellectual property management services. These include negotiation, vetting and drafting of contracts, rendering of legal opinions and advice. The office supports the maintenance of labour stability in the workplace as well as ensuring compliance with the NRF IP Policy. The unit consists of six pillars that deal with legal matters on behalf of the NRF and its business units, as summarised below:

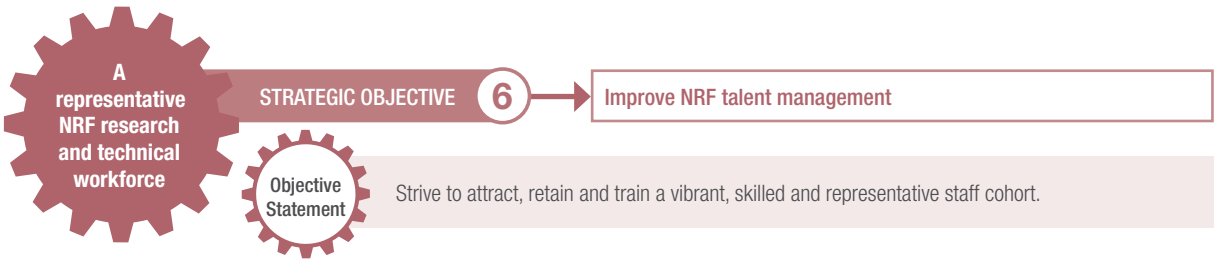
Functions of the Corporate Legal Services and Industrial Relations (CLS & IR) Unit

- Documentation support (drafting, reviewing and vetting of contracts)
- Management of employee relations processes
- Interpretation of statutes and compliance assurance
- Rendering legal opinions and advice on various legal matters
- Litigation management
- Protection of NRF IP

Over the period under review, the CLS & IR Unit drafted, reviewed and vetted 272 contracts, including service level agreements, specific funding agreements, international and local memorandums of understanding (MoUs) and memorandums of agreement (MoAs), collaboration agreements, and employment and consultancy contracts. The unit continues to provide legal advice to business units, manage employee relations by assisting with grievance and disciplinary cases, and draft agreements in which the protection of IP is emphasised in the interests of the broader South African society as envisaged in the Intellectual Property Rights from Publicly Financed Research

and Development Act (No. 51 of 2008). To this end, the unit recently secured the appointment of three IP professionals. During the period under review, the unit represented the NRF on ten occasions at the High Court and Magistrate's Court and mediated 50 Labour Court, CCMA and internal disciplinary and grievance cases.

Table 7: Programme 1 key performance indicators against budget – 2015/16: Objective 6



INDICATORS		Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Proportion of South Africans from designated groups in senior technical and managerial positions (Peromnes level 1-8)	Black %	46%	45%	-2%	There are still a number of vacancies across the organisation in roles where domain expertise is required, resulting in long lead-times to attract designated candidates in scarce-skill categories. The NRF remains committed to achieving its long-term goals and has renewed its focus and commitment towards redress and transformation. The organisation will continue to work towards the achievement of the targets set in the Employment Equity Plan*
	Black number	276	275	-1%	
	Female %	34%	32%	-6%	
	Female number	198	195	-2%	
% staff turnover		6%	10.5%	-58%	In the period under review a total number of 148 terminations occurred and 191 vacancies were filled. The annual staff turnover is 10.5%. This includes the ICSU Regional Office for Africa staff transfer to the Academy of Science of South Africa (ASSAf), retirements and deaths. Controllable staff turnover calculated only on terminations and resignations amounted to 7.1% in real terms.
Number of staff with postgraduate qualifications (Master's and PhD)		385	374	-3%	The variance can be ascribed to vacancies across the organisation in roles where a postgraduate qualification is essential as the desired minimum requirement.
Number of staff in the exchange programme		KPI – data collection in order to trend			
Investment in staff training and professional membership fees (Rm)		12.14	12.66	4%	The overspend can be ascribed to SKA SA African VLBI Network training with African partner countries commencing earlier than initially anticipated.
BUDGET (Rm)		**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Strive to attract, retain and train a vibrant, skilled and representative staff cohort.		4.92	4.54	-0.37	

*The deployment of a representative workforce for the NRF is the ultimate goal of the 2016-2020 Employment Equity Plan. Diversity is embraced and valued as a key differentiator to establish and maintain a harmonious and non-racial work environment. Service excellence will at all times remain a primary consideration. Operational and management strategies will be deployed to enable the NRF to achieve these goals and targets without compromising the quality and efficiency of service delivery.

PROGRAMME 2

8 PROGRAMME 2: SCIENCE ENGAGEMENT

SITUATIONAL ANALYSIS

Transforming from a resource-based to a knowledge-based economy demands a shift in strategic emphasis. In a knowledge economy, generating and distributing knowledge is a key priority, and this knowledge must be disseminated to the wider public. To foster an innovation culture, awareness of the necessity for science and research must be entrenched in society.

Developing meaningful connections between science and society is a long-term endeavour. It underpins the commitment that publicly funded research should be to the betterment of society. To this end, the DST approved a Science Engagement Framework in 2015. This overarching strategy is intended to improve coordination and encourage science promotion, communication and engagement across the national system. The strategy is inclusive and integrative of all knowledge fields, and as such is committed to integrating the natural sciences, engineering, and social sciences and humanities, in pursuit of a society that understands and values science and technology and their critical role in national prosperity and sustainable development, while engaging critically in their development.

OPERATIONAL DIVISIONS

SAASTA → SAASTA is the national coordinating unit for the science engagement strategy.

RISA → RISA engages with and communicates sectoral science and technology strategy and policy and, where appropriate, outcomes and impact.

National Research Facilities → National Research Facilities are mandated to support discipline-specific knowledge dissemination to their stakeholder communities and the public at large through access, collaboration and community outreach initiatives.

PERFORMANCE

As the primary implementer of the science engagement policies and strategies of the DST, the programme adopts a three-pronged approach as set out below.

Science Education → Create tomorrow's scientists and innovators.

Science Communication →
- Celebrate the country's research achievements.
- Expand the public's appreciation for science.
- Encourage engagement with science issues that impact on the daily lives of ordinary people.

Science Awareness → Encourage exploration through hands-on experience while creating enthusiasm for STEMI.

8.1 Situational analysis

8.1.1 The NRF as a science engagement platform

The NRF drives R&D investment towards the nurturing and development of science and researchers across the NSI whilst ensuring active public participation. The process of aligning science engagement across the NRF forms an integral part of these commitments. Experience and research have shown the importance of facilitating a relationship between the academic community and the outreach and awareness sector (science centres, science journalists, science writers, media partners, etc.). The business sector remains a key partner.

The NRF science engagement portfolio is driven mainly through SAASTA, with contract funding from the DST for large-scale projects such as National Science Week (NSW), amongst others. The National Research Facilities are key strategic platforms for science communication and engagement within their disciplinary fields and, in addition to their own programmes, are able to access competitive funding from the various science engagement calls to the stakeholder community.

RISA contributes towards nurturing and developing the academic community and the promotion of research excellence. As such, RISA plays a critical role in science engagement by leveraging strategic partnerships with the academic community. When NRF-funded scientific research findings are made accessible to all sectors of society (scientific community, policy-makers and the general public), it is possible for innovation and entrepreneurial opportunities to arise and to have an impact on policy and social conditions in the country.

8.2 Performance against Objective 7: Entrench science engagement

8.2.1 Science education

The main activities in this strategic area focus on improving learner and educator participation in SET-based programmes. The platforms that are used include science camps, STEMI Olympiads and competitions, Techno-Youth programmes, and educator development programmes. These programmes support both learners and educators and endeavour to support the school curriculum as far as possible.

8.2.1.1 Improving learner and educator participation in SET-based programmes

Olympiads and competitions

Olympiads and competitions form part of science education support by enabling learners to refine and display their own understanding of the knowledge and techniques acquired from formal classroom teaching and learning. There appears to be a positive correlation between learners' participation in Olympiads and competitions and learners' performance in mathematics and science at school.

High school

National Science Olympiad (NSO) – Grades 10 to 12: The NSO reached 30 651 learners across nine provinces in the year under review. Apart from academic performance, the longer-term value of the NSO was measured through two tracking studies:

a) A study that tracked 93 learners who participated in the 2014 NSO and Science Focus Week experience revealed a shift in learner knowledge of the profiled industries, as well as a positive shift in attitude and willingness to pursue a career in SET. These results reiterate the value addition of programmes that provide opportunities for improved performance and exposure of learners to role models and real-time interaction with science- and technology-based institutions.

b) A second study tracked 43 grade 12 learners who participated in the 2014 NSO Focus Week. The study revealed that 84% of these students are studying in SET-related fields; 50% confirmed that they were introduced to their current field of study during the NSO Focus Week, while 39% changed their career choice during the Focus Week; and 65% of respondents indicated that their current field of study was profiled and clarified during the NSO Focus Week.

The NSO was sponsored by Harmony Gold Mining Company for the past four years at a value of R2.5 million per year. The commitment, which ended in June 2015, has yet to be renewed. In the interim, SAASTA is running the NSO from core funding, which is a major risk to the sustainability of this valuable programme.

National Schools Debates – Grades 9 to 11: Debates for high school learners on current issues in science and technology encourage and develop critical thinking skills, investigative research methodologies, skilled communication and careful arguments about the applications of science and technology to real-world problems and solutions. The team from Clarendon Girls' High School in the Eastern Cape was awarded first place and won an educational trip to New York, including a visit to the American Museum of Natural History.

Primary school

The National Science Olympiad (Grades 4 to 6) is funded from core funds and targets primary schools across the nine provinces. In 2015, 23 921 learners participated in this Olympiad, which aims to inspire and motivate learners with an interest in the life sciences. There has been a steady decline in participation since an entry fee was introduced to supplement the limited core budget allocation for the project.

AstroQuiz Competition – Grade 7: The national winner of the 2015 AstroQuiz™ was Maranatha Primary School in Mpumalanga. The Astronomy National Facilities are key partners in this project and the South African Astronomical Observatory (SAAO) hosted the regional round of the AstroQuiz™ in the Western Cape, which attracted 704 grade 7 learners. In addition, SAAO staff held a workshop for the Western Cape science curriculum advisers with the intention of expanding the reach of the AstroQuiz™. This was well received and the curriculum advisers expressed interest in helping the quiz reach rural and underdeveloped schools. SAAO, in collaboration with the KwaZulu-Natal Department of Education, also held a week of intense workshops on the theme 'Earth and Beyond'. These efforts support the enhancement of specific content knowledge in the science classroom.

Eskom Expo: The South African Institute for Aquatic Biodiversity (SAIAB) hosted a *gyotaku* workshop for the finalists in the Eastern Cape region.

University students

The South African Science Lens Competition encourages the use of photography as a tool in science communication, and also encourages engagement with science. During the year under review, the competition yielded 151 entries in four categories, and the winners were announced in *Popular Mechanics* and the *Science Spaza* newspaper.

FameLab sets out to support and encourage those working in science and engineering (ages 21–35) to communicate their work to society as a whole at science festivals. Young scientists aged between 21 and 35 present science for three minutes in a creative and imaginary way. Semi-finals and finals took place at the Cheltenham Science Festival on 3 and 4 June 2015. SAASTA sponsored three heats at the University of Limpopo, University of the Western Cape and University of Fort Hare, each preceded by a workshop. The finals will take place in the new financial year.

Learner and educator interventions

Science camps for learners with potential encourage promising learners to continue and excel in science and mathematics. Although this initiative is still in the planning and pre-implementation phase, SAASTA, through collaborative efforts with the Limpopo Department of Education and Public Works, was able to commence well ahead of schedule, with nine learner camps having been implemented. This resulted in 991 learners being supported in 2015.

Educational resources: An astronomy materials consortium has been established, which includes SAAO, SKA SA, HartRAO, SAASTA and North-West University. A website for the consortium has been set up and is hosted by SAASTA. A poster series has been produced, and the materials for the senior phase of the General Education and Training curriculum are being developed. The Department of Science and Technology will fund the printing and distribution through its Science Promotion Unit. SKA SA has partnered with Datacentrix to enhance the E-Schools Programme in the Carnarvon community schools. In addition, SKA SA requested that the Sutherland schools also be included.

New exhibits have been developed and installed on both the Cape Town and Sutherland sites. To mark the discovery of Proxima Centauri 100 years ago, a Proxima exhibit has been developed. Space has been allocated to the SKA SA and radio astronomy at the Sutherland Visitors Centre to encourage public understanding of multiwavelength astronomy.

A total of 22 schools across four SAEON nodes have received automatic weather stations for use in curriculum-based activities. The schools are learning to use the weather data for classroom teaching, and learners are encouraged to design their own science projects using the weather data. A learner from the SAEON Egagasini Node used the weather data for a science project to determine the impact of the Cape Town weather on learner performance.

Outreach programmes: A joint outreach programme was implemented by SAAO/SKA SA in the towns of Sutherland, Carnarvon, Williston and Calvinia. The programme included stargazing sessions, science shows, teacher training and a public lecture. Dr Graham Walker from the Australian SKA project and the Australian National University facilitated the science shows. iThemba LABS launched the West Coast Intervention Programme, a partnership with the UNICEF outreach initiative that included 10 schools in the Vredendal and Vanrhynsdorp areas. The objective of this intervention is to reach out to learners in areas where virtually no science-oriented public engagement programmes exist. A total of 1 558 learners were reached through activities that included science shows and hands-on workshops. Learners participating in the education outreach programmes of the SAEON Elwandle and Egagasini Nodes had an opportunity to travel on the *Algoa* research vessel from Port Elizabeth to Cape Town on the return leg of the Agulhas System Climate Array (ASCA) cruise in April 2015.

The Bloodhound Supersonic Car educator project was initiated by a team of UK Formula One and Aerospace experts. The aim of the project is to reach 1 000 mph on land by means of a supersonic car. Participation in a variety of national implementations reached a total of 279 118 members of the public.

Teaching resources: A grade 10, 11 and 12 science educator was recruited at Carnarvon High School (CHS). In addition, in partnership with TEACH SA, two graduates were placed at Carnarvon Primary School (CPS) to teach literacy and numeracy to learners in grades 4 to 5 and grades 8 to 9. CHS educators successfully completed the Meraka/DST tablet-based teaching programme.

A very successful educator workshop run by iThemba LABS at Vredendal Primary School attracted 32 teachers, who were given the opportunity to perform curriculum-based science activities. The SAASTA Educator Support for Mathematics, Physical Science and Life Orientation Programme targets grade 10 to 12 educators in order to enhance their content knowledge of curriculum topics. The ultimate goal is to improve learner performance.

The Komatsu Learner and Educator Development Programme focuses on mathematics and science education. This is a three-year programme for the same group of learners that commences in grade 10, and monitors the progress of the learners through to grade 12, concurrently with their mathematics, physical science, life science and life orientation educators. A total of 15 schools, 120 educators and 525 learners were selected from Limpopo (Waterberg District), Mpumalanga (Nkangala District) and Northern Cape (John Taolo Municipality). The targeted reach for the programme was not achieved on account of funding only being received in August 2015.

8.2.1.2 Increasing learner exposure to SET careers

Participants in these programmes are exposed to career opportunities in SET. The objectives are achieved through participants' interaction with role models in SET, visits to industries, workshops on career guidance for life orientation educators and provision of career guidance resources. During the period under review, the following performance results were reported:

Role-modelling Campaign: Collaboration with organisations such as Public Works, the Outlook Foundation, Tshwane Department of Basic Education and United Hluvukani Youth Development.

iThemba LABS collaborated with the National Science and Technology Forum (NSTF) in order for past NSTF-BHP Billiton awardees to address high school learners at iThemba LABS. The 2014 winner addressed a total of 140 learners from 12 local high schools; the event was a joint arrangement with the Western Cape Education Department. The last of these lectures was held on 1 March 2016, with past winner Prof. Jennifer Jelsma addressing the learners.

The Undergraduate Support Programme aims to encourage second- to fourth-year undergraduate students with a component of physics in their undergraduate degree to pursue further studies in physics. A total of 341 students received bursaries. The bursaries given by SKA SA to learners at CHS are starting to yield positive results. Five grade 12 learners obtained university exemption at the end of 2015. These learners were awarded SKA SA undergraduate bursaries to study towards degrees in SET. SAIAB presented an exhibit and the interns and postdoctoral students interacted with learners at a grade 12 careers day in Grahamstown, which was organised by the Eastern Cape Department of Education.

8.2.2 Science awareness

8.2.2.1 Stimulating the communication of SET to public audiences

Participation and awareness programmes

This section focuses on public audiences including educators, learners and the general public. The objective is to stimulate the communication of SET and to provide access to relevant scientific and technological information through exhibits, the creation of interactive platforms, and the distribution of relevant resources.

National Science Week (NSW) is an annual country-wide celebration of science, led and funded by the DST. NSW targets learners, educators, the public, politicians and the community at large, to expose them to the value and impact of SET. The 2015 NSW at North-West University in August 2015 was attended by 2 189 learners from 34 schools. A total of 74 exhibitors displayed exhibitions and engaged the public in line with the theme 'International Year of Light and Light-based Technologies'. SAASTA developed four new education resource materials based on the theme. During August 2015 (as part of NSW), the division reached out to 7 307 leaners and 293 teachers in the Northern Cape towns of Kimberley, Aggeneys and Postmasburg.

The National Zoological Gardens (NZG) hosted a public event consisting of a number of stands showcasing different facets of light. The event drew 11 342 attendees. Presentations aimed at high schools were attended by 856 learners. SAIAB's activities were carried out in partnership with Scifest Africa, the National Arts Festival (Creative City) and the National English Literary Museum.

Science festivals (including travelling exhibits): The public participation target was exceeded by 164 436 for the reporting period. SAASTA was able to support more festivals and other outreach activities than initially anticipated. Participation in the Rand Easter Show was the main contributor to the variance, with a recorded attendance of 220 000 members of the public. The NZG attended three science festivals in Polokwane, Thohoyandou and Mbombela. Various lectures were presented based on the theme of each event. The topics were focused on biodiversity or DNA and included a practical component. The lectures were attended by 1 572 learners and 63 educators. The iThemba LABS visit to Limpopo resulted in interactions with more than 2 000 learners and about 50 teachers through science shows and workshops. The facility also participated in Scifest Africa, where daily interactive workshops were run on cancer and its treatment at iThemba LABS.

SAAO also participated in the National Science Festival in Grahamstown and recorded good attendance at their workshops and exhibitions held in collaboration with SKA SA. Furthermore, the SKA SA data management unit was trained and supplied with kits, which they used to conduct outreach as part of the Fingo Science Festival, a township outreach section of the National Science Festival. SAIAB again presented their extremely successful pop-up science centre called Water World, which has become an annual Scifest Africa exhibit, providing interactive exhibitions, talk shops, lectures, tours and presentations. A total of 84 schools visited Water World, with 4 406 formally registered participants.

Science advancement programmes (Johannesburg Observatory): A number of science and technology programmes targeting learners, educators and the public are implemented on-site at the Johannesburg Observatory, and as outreach activities. These range from curriculum-based activities (for learners and educators) and interactive exhibits, to sky viewing with the public. The target for the reporting period was exceeded by 1 102, which can be attributed to word-of-mouth marketing and an increase in financial support

for the programme. World Space Week was celebrated in September 2015, followed by an Open Day aimed at creating awareness of career opportunities in SET for learners and the public. The event recorded an attendance of 1 059 learners and 30 educators. The implementation of the programme in various science festivals across the country reached a total of 52 735 members of the public in the reporting period.

8.2.2.2 Science centre programmes

Programmatic support to science centres contributes to the DST's science missions on astronomy, human palaeontology, biodiversity, Antarctic research, indigenous knowledge, and technology for deep mining, with the objective of enhancing the programmes implemented in a variety of science centres. The science centres are Moipone, Osizweni Science Centre, UL Science Centre, NWU Science Centre, Cape Town Science Centre, Fosst Discovery Centre, Boyden Science Centre, UniZul Science Centre and Mothibistad Science Centre. During the period under review, 17 science clubs each received the following resources:

- One robotic kit and accessories;
- One laptop; and
- Laboratory equipment and chemicals.

Science centre accreditation: The DST, through SAASTA, initiated the implementation of the Framework for Promotion of Excellence. This accreditation approach aims to admit science centres to the envisaged National Network of Science Centres in South Africa. The five centres that underwent full evaluations for the pilot phase are awaiting accreditation decisions from the DST.

Science centre development including infrastructure: Science centre staff capacity is developed to improve centre management and the administration of funding. Collaboration with the Japan International Cooperation Agency (JICA) resulted in two sets of training interventions. Three half-day learner workshops were presented at science centres in Mpumalanga, Limpopo and North-West. A total attendance of 50 learners and 25 educators was recorded. The NRF is in on-going discussions with the management team of Iziko Museum on the proposed upgrade of the Cape Town Planetarium to a digital platform. The DST has contributed R10m, with further funding of R3m from the National Lottery Fund and R10m from the University of Cape Town (UCT), University of the Western Cape (UWC), Stellenbosch University (SU) and Cape Peninsula University of Technology (CPUT) (R2.5m each). The upgraded facility will provide both science engagement and research platforms. The upgraded planetarium is expected to be in operation towards the end of 2016. A steering committee that includes the NRF and university representatives has been established to oversee the implementation.

8.2.3 Science communication

Specialist areas within science communication include media engagement, audience analysis, scientific editing, ICT specialisation and discipline-specific science communication currently in biotechnology, nanotechnology, hydrogen fuel cell technology, space science, the palaeosciences and Antarctica. In addition, science communication in astronomy, biodiversity conservation and the nuclear sciences is also undertaken by the National Research Facilities.

Science communication helps to develop a critical public that actively engages and participates in the national discourse of science and technology to the benefit of society.

8.2.3.1 Increasing the quality and quantity of science reporting with regard to print and broadcast media

Media placement ensures that science is consistently communicated to the public through different media platforms. The advertising value equivalent (AVE) of the media placements is estimated at R15.84m.

8.2.3.2 Developing capacity amongst science communication practitioners

Various training opportunities were presented in order to build capacity to enhance science engagement in South Africa.

African Union (AU) Summit journalist media excursions to two DST-NRF Centres of Excellence in Gauteng: Brand South Africa, in partnership with the Department of International Relations and Cooperation, South African Tourism, the Gauteng Tourism Authority, Ekurhuleni Municipality, the NRF and the City of Tshwane invited journalists to participate in a number of media engagements taking place on the margins of the 25th AU Summit in June 2015. The media itinerary involved a series of engagements to provide journalists with

a deeper understanding of South Africa in a number of key areas, including science, technology and innovation initiatives.

Science and Technology Youth Journalist Programme: In support of the Comprehensive Rural Development Programme, SAASTA was tasked to implement the Innovation Partnership for Rural Development Programme (IPRDP) Science and Technology Journalist programme within district municipalities where IPRDP technologies are demonstrated. The programme is primarily aimed at unemployed young residents (aged 18 to 35 years) with undergraduate qualifications in science, engineering, communications and journalism studies. Seventeen candidates were recruited to the programme and placed with community media hosts as interns. The interns, as well as the hosts, attended a two-day science journalism workshop in February 2016.

A collaborative media engagement project was initiated with the Rhodes School of Journalism and Media Studies (JMS) and the local community newspaper, *Grocotts Mail*, to maximise local coverage of National Science Week activities. A two-hour crash course in science journalism was presented to 11 JMS postgraduate diploma students.

8.2.3.3 Discipline-specific science communication

Through this programme, the NRF aims to profile South African science and science achievements domestically and internationally, demonstrating their contribution to national development and global science, thereby enhancing the country's public standing.

The Public Understanding of Biotechnology (PUB) Programme is an initiative to promote a clear, balanced understanding of the potential of biotechnology (including both the science and related ethical, moral and social issues) and to ensure broad public awareness, dialogue and debate. Through collaboration with other programmes, the PUB programme potentially reached a public audience of 16 055 during the year under review.

Nanotechnology Public Engagement Programme (NPEP): To ensure that South Africa remains competitive within the international research community in this fast-developing field, the country's nanoscience and nanotechnology public engagement programme is coordinated at a national level by the DST and managed by SAASTA. Through collaboration with other programmes, the NPEP programme potentially reached a public audience of 254 989.

Hydrogen South Africa (HySA) Public Awareness, Demonstration and Education Platform: SAASTA was appointed by the DST in 2010 to manage the HySA Public Awareness, Demonstration and Education Platform (PADEP). Through collaboration with other programmes, the HySA PADEP programme potentially reached a public audience of 25 207.

Antarctic Legacy of South Africa (ALSA): The overall aim of the ALSA project, funded by RISA, is to preserve photographic, written, oral and other records in a publicly accessible, open access electronic database to ensure that South Africa's involvement in Antarctica, Prince Edward Islands, Gough Island and the Southern Oceans is archived for posterity. The launch of the project website was one of the major goals achieved, with the main aim of the website being to create a link to the ALSA archived database and to enhance awareness of South Africa's involvement 'down south'. A public exhibition (Gateway to Antarctica Exhibition) of 11 paintings of historic Antarctic vessels was held in the Iziko Maritime Centre, inclusive of public lectures. The project has secured coverage in print media as well as on national broadcasting platforms and is active on social media platforms. The project has also embarked on giving talks at schools to grade 8, 10 and 11 life sciences learners, as well as creating awareness about Antarctica and especially the South African National Antarctic Programme (SANAP) at university open days.

African Origins Programme funded through RISA: Noting that South Africa has an obvious geographical advantage in palaeontological, palaeo-anthropological and archaeological research, the country should emerge as a global leader in these fields of study. The Palaeontological Scientific Trust (PAST) completed phase II of their 'All from One' campaign, which culminated in the construction of an interactive, informative exhibition to promote public awareness and community engagement in the palaeosciences.

The exhibition explores the science of the shared origins of humankind and of all life forms, and illustrates the critical

role the Africa has played in the shaping of humankind. The exhibition structure is a representation of a double helix and stands 18 m long and 4 m high. The exhibition was opened by the Minister of Science and Technology at the Standard Bank in Rosebank and attracted more than 5 000 visitors in the first 11 weeks.

The visibility of this exhibition prompted a number of editorial pieces (*Business Day, The Herald*, *Classic Feel* November 2015 issue), newspaper articles (*Mail & Guardian, The Star*), radio interviews (SAfm, Power FM) and television interviews (eNCA News Night, Morning Live). This campaign has proved so successful that the DST has agreed to fund a further two phases, including a three-city tour of the exhibition in 2016 and the design and distribution of a banner version of the exhibition to schools and science centres throughout South Africa.

8.2.3.4 Stakeholder engagement

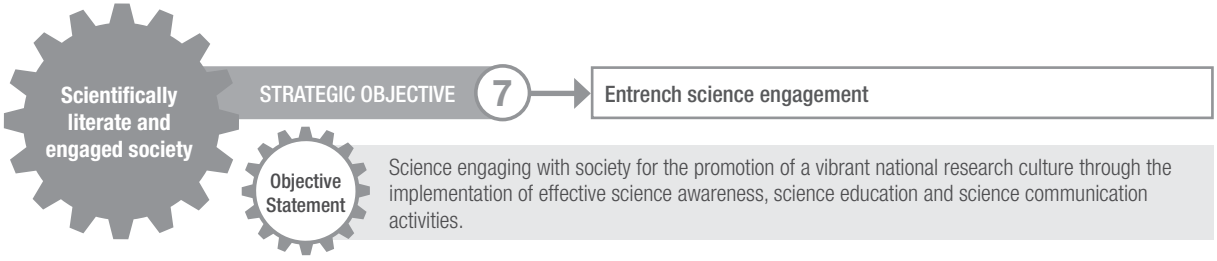
The National Youth Service Programme aims to identify and reach unemployed SET graduates and place them at host institutions, thus creating opportunities for them to gain work experience and life skills. A total of 316 appointments were made against a target of 140 during the reporting period.

World Science Forum (WSF): The NRF was actively represented as a partner in the local organising committee for the WSF. The conference in Budapest attracted 1 040 attendees from 84 countries. The NRF also participated in the exhibition at the WSF.

The South African PhD Project hosted conferences in three rural provinces, namely the Eastern Cape, Limpopo and the Free State. Particular focus was placed on potential PhD candidates that are not currently within the higher education system.

The Centre for High Resolution Transmission Electron Microscopy (C-HRTEM) at the Nelson Mandela Metropolitan University (NMMU) participated in the annual conference of the Microscopy Society of Southern Africa (MSSA).

Table 8: Programme 2 key performance indicators and objectives against budget – 2015/16: Objective 7



INDICATORS		Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Investments in science engagement activities (SAASTA and National Research Facilities) (Rm)		86.39	100.78	17%	The NZG adjusted its cost centre classification to reflect investment in Science Engagement more accurately. The net effect was balanced in the Shared Services cost centre.
Interactions with the public (learners, educators and general public) focusing on science awareness activities (SAASTA)	Number of interactions	10	7	-30%	The variance is due to the programme: Public Understanding of Biotechnology - being withdrawn by the DST. Two other programmes were reported on under interactions focussing on educator development and learner performance in Mathematics, Technology and Science due to a change in its objectives to focus on learner and educator development and not on science awareness as was historically the case. The programmes are Science Centre Capacity Building – workshops for learners and educators, and the Bloodhound Supersonic Car project – educator workshop.
	Approximate number of public reached	560 000	1 013 716	81%	The variance is due to the unit being able to participate in an additional 16 festivals/events during the reporting period.
Interactions focusing on educator development and learner performance in Mathematics, Technology and Science	Number of interactions (SAASTA)	8	12	50%	During the reporting period 3 additional interactions were hosted. The Komatsu Learner and Educator Development programme was hosted through private funding received. In addition 2 projects that normally would not report under the Education KPI since learner and educator development is not part of its objectives, hosted specific learner and educator development interventions. The programmes Science Centre Capacity Building – workshops for learners and educators, and the Bloodhound Supersonic Car project – educator workshop.
	Educators reached (SAASTA and National Research Facilities)	13 870	19 410	40%	The variance is due to the unplanned educator workshop conducted by the Bloodhound SCC team, as well as a higher-than-anticipated number of educators participating in West Coast and Northern Cape initiatives.
	Learners reached (SAASTA and National Research Facilities)	360 320	370 624	3%	The target was met earlier than planned, mostly due to collaborations such as science camps for learners with potential as well as role-modelling campaigns.
BUDGET (Rm)		**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Science Engagement		165.36	179.36	-14.00	The over-expenditure is due to the NZG cost centre re-classification to reflect their investment in science engagement more accurately.

PROGRAMME 3

9 PROGRAMME 3: RISA

SITUATIONAL ANALYSIS

The Research and Innovation Support and Advancement division (RISA) of the NRF supports and promotes human capacity development, knowledge generation and platform provisioning through the provision and administration of, among other initiatives, a world-class granting system. The work of the programme is informed by a range of national policies, priorities and strategies, including the strategy for Human Capacity Development for Research, Innovation and Scholarships and the 2013 Ministerial guidelines for improving equity in the distribution of the DST-NRF bursaries and fellowships.

OPERATIONAL DIVISIONS

ARIC	Applied Research, Innovation and Collaboration
RCCE	Research Chairs and Centres of Excellence
HICD	Human and Infrastructure Capacity Development
IEPD	Institutional Engagement and Partnership Development
GMSA	Grants Management and Systems Administration
RE	Reviews and Evaluation
KFD	Knowledge Fields Development
IRC	International Relations and Cooperation

PERFORMANCE

RISA endeavours to:

- Provide best practice systems in support of grant making, reviews and evaluations;
- Promote globally competitive research and innovation;
- Enhance strategic international engagements; and
- Establish and maintain research infrastructure and platforms.

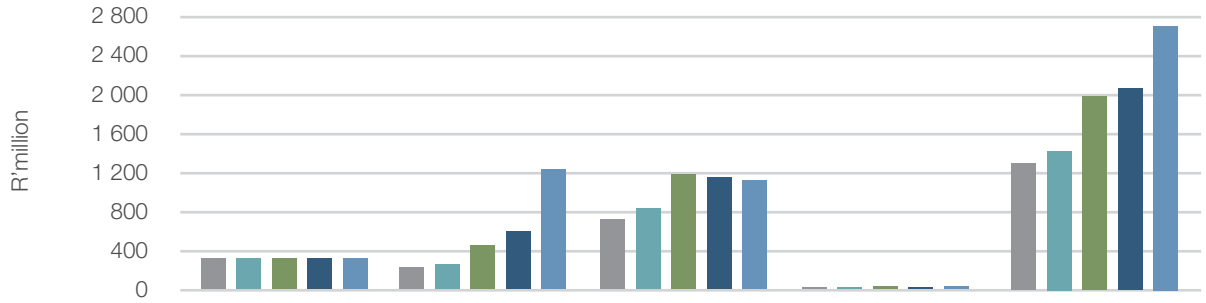
9.1 Sources of funding

RISA receives the following forms of funding:

- Discretionary funds allocated to the NRF through the DST parliamentary grant (core funds);
- Designated funds from the DST for supporting programmes such as the CoEs and SARChI;
- Contract funds received from various government departments, for example:
  - The Department of Higher Education and Training (DHET) for the National Skills Development Fund; and
  - The Department of Trade and Industry (***the dti***) for THRIP.

Over the five years from 2011/12 to 2015/16, the total designated income increased by 116%. Between 2014/15 and 2015/16, designated income increased by 110%. The parliamentary grant (discretionary income) increased by an average of 4% over the same period. Considering that the operations of the RISA division are supported from the parliamentary grant, the current disproportionate growth in allocations is having an impact on the financial sustainability of the organisation.

Figure 15: Growth rate of RISA funding streams (R'000) (2011/12–2015/16)



	MTEF Parliamentary Grant	MTEF Designated Income (Ringfenced)	Designated Income (Contracts)	Other Income	Total
2011/12 Actual	318	232	726	13	1 289
2012/13 Actual	320	259	830	19	1 428
2013/14 Actual	318	451	1 183	39	1 991
2014/15 Actual	318	587	1 156	10	2 071
2015/16 Actual	333	1 233	1 114	27	2 707

9.2 Performance against Objective 8: Provide best practice systems in support of grant making, reviews and evaluations

9.2.1 Reviews and evaluation

The NRF investment model is underpinned by effective and transparent review and evaluation practices to ensure credibility and a commitment to excellence. Funding decisions are executed in line with international standards through the initiation of a review process. The NRF also conducts regular instrument, programme and institutional reviews to ensure the relevance and quality of funding instruments, programmes and institutions benefiting from NRF funding.

The organisation has also implemented, and manages, an evaluation system that supports the process of rating researchers. The NRF rating system is a benchmarking tool to evaluate the relevance, productivity and impact of individual researchers. The validation of the NRF rating system lies in the observable trend that NRF-rated researchers are more productive on average than their non-rated counterparts, as evidenced by **Figure 16** below. Overall productivity of the research system increased by 14% between 2013 and 2014, with NRF-funded researchers contributing 44% of these publications.

The NRF prioritised transformation of the rated researcher cohort over the period under review. The target of 768 black rated researchers was exceeded by 10%. The target of 992 female rated researchers was exceeded by 6%. Transformation of the rated researcher cohort will continue to be an area of focus in the new financial year.

9.2.2 Grants management

The NRF offers assurance through leading-edge grant-management systems and processes that regulate the funding and grant-making. The centralised service leverages economies of scale, improves efficiencies and adopts world-class, auditable business processes for grant management. Applicants and recipients are offered best-of-breed system support and administration of funding processes. An amount of R10m was allocated to undertake a 'tracer study' and to establish an alumni office for tracking NRF funding recipients. Analysis and interpretation of the results of the tracer study will provide the DST and NRF with valuable information about the effectiveness of funding offerings and long-term impact on the NSI.

Figure 16: Average number of Web of Science publications by NRF-funded researchers (rated vs non-rated)

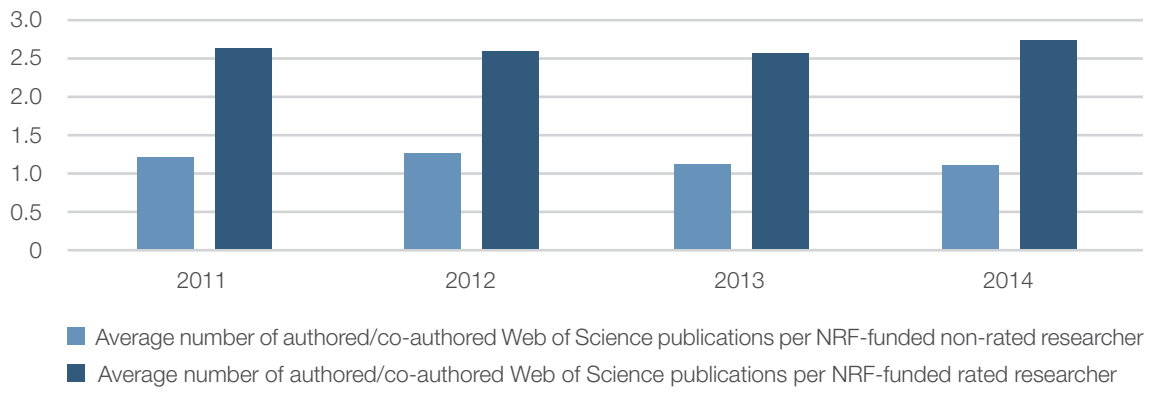


Table 9: Programme 3 key performance indicators against budget – 2015/16: Objective 8

INDICATORS		Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Grant funding awarded (Rm)		2 106	2 317	10%	Unspent funds were carried over from 2014/15 to 2015/16.
Number of NRF-rated researchers from designated groups	Black %	24%	26%	7%	The rating call resulted in 433 first time applications, which is in line with existing trends. The ratio of first time applications from black and female researchers were higher than during the previous reporting period, resulting in an overachievement of the target.
	Black number	768	866	13%	
	Female %	31%	31%	0	
	Female number	992	1 054	6%	
BUDGET (Rm)		**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
RISA support systems		49.71	58.45	8.74	The variance is due to the acquisition of the Phoenix system and software licences.

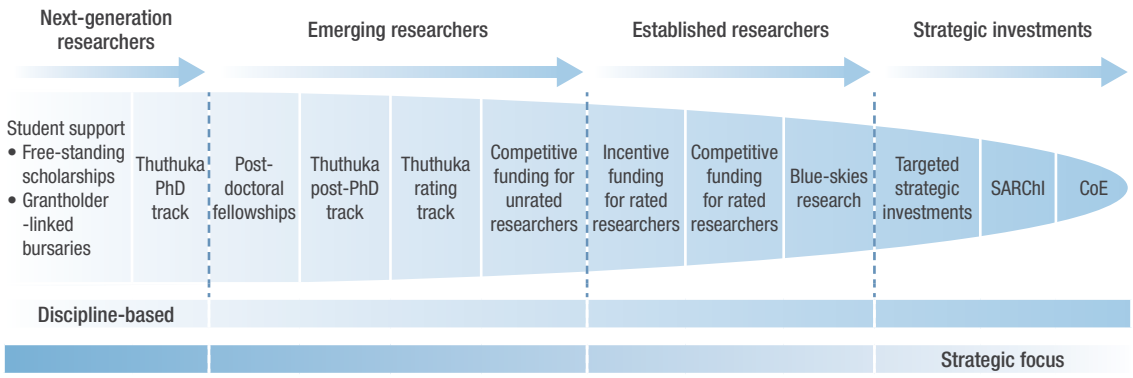
9.3 Performance against Objective 1: Promote globally competitive research and innovation

RISA invests in knowledge, people and infrastructure on a competitive basis while advancing equity and transformation across the system in line with the directives of the Ministerial Guidelines for Equitable Distribution of NRF Bursaries and Fellowships.

Through the use of the Human Capacity Development Excellence Pipeline (**Figure 17**) and the structuring of instruments to support each aspect, RISA is able to function across a grant-making value chain, providing support, research infrastructure, international and industry collaboration opportunities and mobility.

The success of the pipeline methodology 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. Support of established researchers as well as strategic investments such as the South African Research Chairs Initiative (SARChI) is therefore included in the pipeline, with the objective of attracting and retaining leading supervisory capacity. The pipeline further addresses the need for the provision of state-of-the-art infrastructure to support globally competitive research. Through strategic investments in, inter alia, SARChI and the CoEs, the NRF is able to create multidisciplinary research platforms that support the exploration of innovative research on nationally and globally relevant subjects.

Figure 17: Research and innovation support and advancement through the Human Capacity Development Excellence Pipeline



	Next generation		Emerging				Established			Strategic Investments		
Year	Studentship Support	Thuthuka PhD Track	Post-doctoral fellow-ships	Thuthuka post-PhD Track	Thuthuka Rating Track	Competitive Funding Unrated	Incentive Funding Rated	Competitive Funding Rated	Blue-skies Research	Targeted Strategic Investments	SARChI	CoE
	Rand million											
2011/12 Actual	215.0	5.4	39.8	6.0	6.0	5.1	83.7	14.9	8.4	52.0	156.0	72.5
2012/13 Actual	328.1	7.4	47.6	9.3	5.5	6.4	97.6	29.1	3.1	69.2	170.6	83.2
2013/14 Actual	427.2	10.2	82.0	13.7	6.3	4.5	107.9	25.2	5.0	70.5	236.2	83.1
2014/15 Actual	537.4	13.0	105.9	17.6	7.9	17.3	116.4	60.0	7.7	88.6	281.1	140.1
2015/16 Actual	731.1	11.2	142.4	20.2	8.4	25.9	126.0	95.6	10.9	100.4	307.6	175.9

Note: The pipeline provides an illustration of investment made and may not include all funding opportunities in these categories.

9.3.1 Increase and provide support for next-generation, emerging and established researchers

9.3.1.1 Human capacity development

In the 2015/16 financial year, the NRF invested R815m (67% of human capacity development funds) in next-generation researchers. This is significantly higher than the projected R608m (62%) due to carry forwards of funding from the previous financial year as well as additional funding received from the DST. The investment in emerging or early-career researchers amounted to R160m (13%) against a projected R171m. Established researchers received R249m (20%), R47m more than projected, as depicted in **Figure 18**.

Investment in next-generation researchers has increased by 118% since 2011/12 in order to achieve the human capacity development and transformation goals of the DST and the NRF. Increased investment at this stage of the pipeline is essential to ensure optimal growth of emerging and established researchers.

In contrast, the investment in emerging researchers remained relatively stable, with a 14% increase over the five-year period.

The investment in established researchers cannot be viewed in isolation, as many established researchers benefit from the investment in strategic instruments such as SARChI and CoEs. Since 2011/12, just over R2bn has been invested in strategic instruments – an increase of 110% over the five-year period. Direct investment in established researchers grew by 60% from 2011/12 to 2015/16. Sufficient support for this cohort of researchers ensures adequate supervisory capacity, productivity in the system and an increase in the country's knowledge economy.

Over the reporting period, the NRF funded 13 006 next-generation postgraduate students against a target of 14 420. The 9% variance is related to underperformance in the Honours/B Tech and Master's categories. The reintegration of THRIP into ***the dti*** impacted bursary numbers. The NRF exceeded the target for doctoral support by 6% (3 181). Of the postgraduate students supported, 69% were black, against a target of 65%, and 54% were female, against a target of 56%.

Figure 18: Investment trends in the Human Capacity Development Excellence Pipeline (2011/12–2015/16)

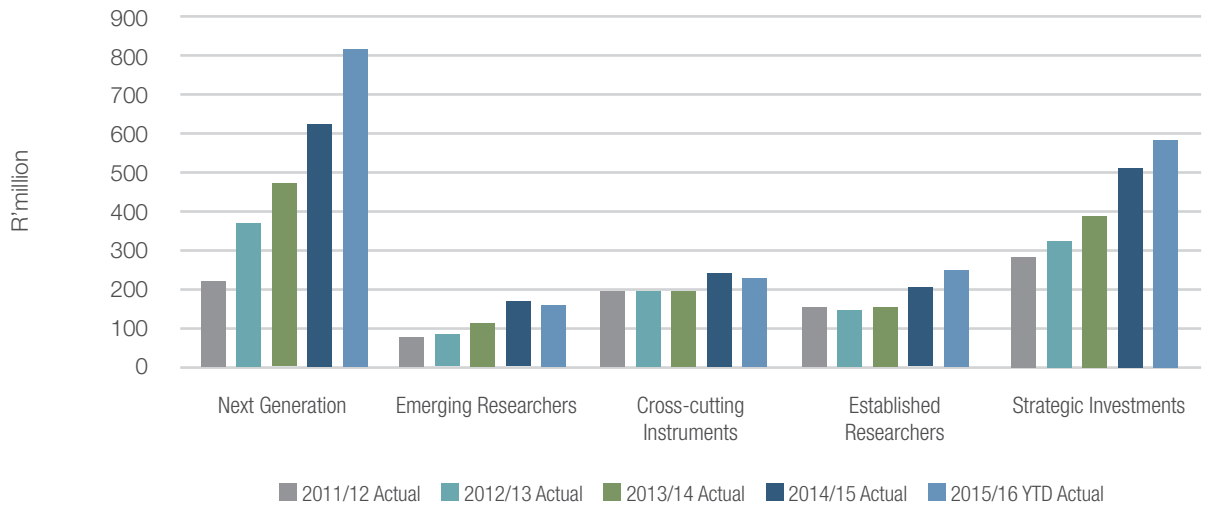
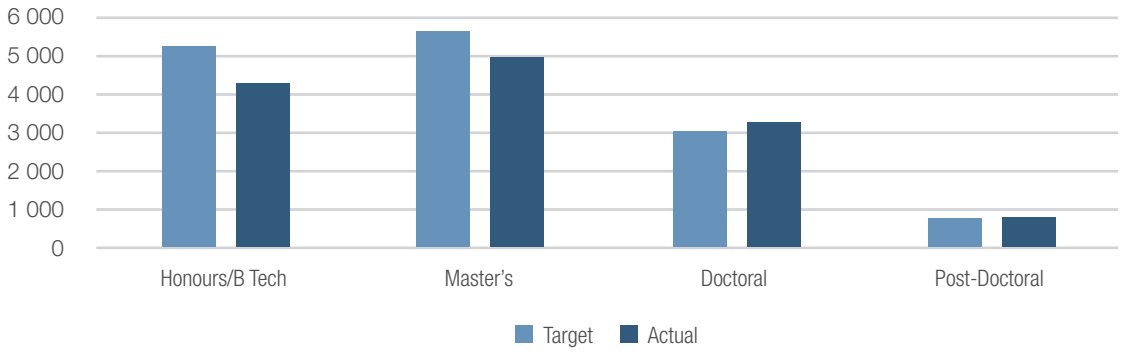


Figure 19: Postgraduate student support per category in the 2015/16 financial year



A total of 4 315 researchers were supported, against a target of 4 539. Of the researchers supported, 31% were black, against a target of 34%, and 37% were female, against a target of 44%. It should be noted that the achievements against the targets set in this category are based on grants that have been expensed and not grants awarded. The expenditure of grants is actively followed up by the NRF, but not ultimately within its control.

Strategic investments include programmes such as SARChI and the CoEs. Over the reporting period, the investment in strategic areas enabled the support of an additional 1 759 students, of whom 63% were black and 53% female.

9.3.1.2 Knowledge generation

Building research capacity contributes to the generation of knowledge and innovation in the NSI. The NRF surveys the research landscape and creates funding instruments based on global and local research trends. Such instruments include:

Renewable and Sustainable Energy Scholarships (RSES)

To date RSES has awarded 11 block grants supporting 37 master's and 14 doctoral students. The renewable energy research platforms include the Coalgae Project at NMMU, Energy Research Centre at UCT, SARChI Chair in Biomass, SARChI Chair in Biofuels at SU and Biofuels Associate Chair at NWU.

South African Nuclear Human Asset and Research Programme (SANHARP)

In addition to the existing funding support provided, the programme reprioritised funding to support an additional 42 postgraduate students. This included four Manus and MatSci students who were recruited to complete their master's degrees. Manus is a master's degree in accelerator and nuclear physics. MatSci is a master's degree in materials science.

Marine and Oceanographic Science

Through its involvement with the South African Network for Coastal and Oceanic Research (SANCOR), the South African National Antarctic Programme (SANAP) and the South African Marine Research Exploration Forum (SAMREF), the NRF contributed to the development of policy and the creation of knowledge. The Marine Research and the Southern Oceans and Antarctica research plans have been used as a basis for the development of the Marine and Antarctica Research Strategy (MARS). The NRF has been tasked with managing the process for the establishment of a major component of the Operation Phakisa Initiative B3: The Offshore Oil and Gas Environmental Research Collaboration Project. This section of Operation Phakisa serves to identify opportunities for collaboration between the South African marine and Antarctic research community and the oil and gas industries in South African waters.

Vulnerable disciplines

During the period under review, the NRF supported the vulnerable disciplines of nursing and statistics in collaboration with the Forum of University Nursing Deans in South Africa (FUNDISA) and the South African Statistical Association (SASA) respectively. The total investment in vulnerable disciplines was R11.8m.

Strategic investments: SARChI

The research chairs contribute to knowledge generation across a varied spectrum of relevant themes. Over the past five years, R1.1bn was invested in support of the research chairs. SARChI is uniquely positioned to help find solutions facing South Africans. To this end, the NRF has supported the creation of communities of practice (CoPs), where various chairs form multidisciplinary collaborative and solution-orientated environments. Over the reporting period, the following CoPs were established:

- Strategies to Overcome Poverty and Inequality in South Africa CoP
- Medical Health Research Chairs CoP
- Mathematic Education Research Chairs CoP

SARChI bilateral chairs created a new modality of cooperative partnerships between South Africa and global partners. The first such initiative was the SA-Swiss Bilateral Chair in Global Environmental Health that was launched in June 2015. The subsequent launch of the SA-UK bilateral chairs has created the opportunity for three positions in the broad disciplines of food security, energy and water. All three chairs have been approved for funding, viz., (i) NMMU with Southampton University; (ii) UWC with the University of Sussex; and (iii) Wits University with Oxford University.

Strategic investments: Centres of Excellence (CoEs)

These physical and virtual CoEs focus on critical matters facing South African communities. Researchers at the CoEs work at the cutting edge of research and collaborate to create new knowledge and generate competitive research output across the globe. The instrument offers a unique training ground for new researchers. From 2011/12 to 2015/16, R554.7m has been invested in CoEs.

Flagship initiatives

A flagship in Critical Thought in African Humanities was launched at UWC. A second flagship in Hydrogen Intensity and Real Time Analysis eXperiment (HIRAX): Mapping the Southern Sky was awarded to UKZN.

Table 10: Programme 3 key performance indicators against budget – 2015/16: Objective 1

An internationally competitive and transformed workforce

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

Objective Statement: Driving research competitiveness through the support of high-quality research and innovation, as well as the generation of knowledge and the development of human capacity, in critical areas.

INDICATORS		Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Investment in HCD pipeline	Next generation %	62%	67%	7%	The amounts invested (expensed) include funding carried forward from the previous financial year, additional funding received from the DST for HICD programmes and incentive and competitive funding. The amounts exclude investment not expensed during the period.
	Next generation (Rm)	608	815	34%	
	Emerging %	17%	13%	-23%	
	Emerging (Rm)	171	160	-6%	
	Established %	21%	20%	-3%	
	Established (Rm)	202	249	23%	
Number of NRF-funded researchers from designated groups	Black %	34%	31%	-8%	Transformation indicators were adversely affected by lower student numbers due to: • The integration of THRIP into ***the dti*** and the subsequent uncertainty of THRIP funding during the 2015/16 financial year. Funding was only received in May 2017. No call for new THRIP applicants could therefore be opened during the reporting period. • Honours and BTech bursaries for the 2015 academic year were awarded as Block Grant allocations to institutions. Allocations of Block Grants were made from December 2014 to April 2015 for uptake in the 2015 academic year. Additional Block Grant applications were made in August 2015 after reconciliation of awards not taken up and the resulting available funds. Due to the unrest at universities there was a delay in receiving nominations from the institutions, receiving necessary information from students, and administration of additional awards at the research offices. Going forward, the NRF has initiated earlier calls for all scholarships and bursaries to optimise uptake. The NRF exceeded the target for doctoral students. Additional funding for CPPR (Competitive Funding for Rated Researchers) and uptake of new Chair positions resulted in the support of additional doctoral students.
	Black number	1 543	1 355	-12%	
	Female %	44%	37%	-15%	
	Female number	1 997	1 610	-19%	
Number and ratio of postgraduate students funded per designated group	Black %	65%	69%	6%	
	Black number	9 373	8 980	-4%	
	Female %	56%	54%	-3%	
	Female number	8 075	7 032	-13%	
Number of postgraduate students funded per level	Master's	5515	4 853	-12%	
	Doctoral	2 996	3 181	6%	
BUDGET (Rm)		**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Promote globally competitive research and innovation		2 327.63	2 252.82	74.81	Variance can be attributed to additional funding received from the DST.

9.4 Performance against Objective 2: Enhance strategic international engagements

9.4.1 Internationalisation

The NRF, in close collaboration with the DST, takes proactive responsibility for facilitating and enhancing international scientific collaboration between individual scientists, higher education institutions, research bodies, and scientific and professional associations in South Africa and abroad. This is done through various mechanisms that create access and opportunities for researchers both locally and abroad.

The NRF is a recipient of the Newton Fund through the bilateral agreement with the UK. Through this engagement, 19 fellowships have been awarded to South African postgraduate students to date, as well as 51 mobility grants.

Table 11: Programme 3 key performance indicators against budget – 2015/16: Objective 2

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Increase in the number of international co-publications	7 400	8 838	19%	This is a systemic indicator of the increase in global recognition of the quality of South African research and researchers.
Increase in the total grant funding for internationalisation (Rm)	117.28	83.40	-29%	During the 2015/16 financial year, no Africa calls were launched. In discussion with the DST and the African bilateral partners, a decision was taken to focus rather on a consolidated approach during 2016/17, with a number of joint research opportunities planned. The approach was also informed by feedback from researcher workshops held, and technical visits to selected SA universities with Africa bilateral grant holders.
BUDGET (Rm)	**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Internationalisation	157.47	170.79	13.32	The variance was due to proactive redirection of available funds to new initiatives in order to enhance expenditure rates as well as the earlier approval of the Science and Technology Agreements Fund budget (improvement from August to May).

INTERNATIONALISATION

The number of international co-publications increased by

19%

indicating the increase in global recognition of the quality of South African research and researchers.

South Africa has concluded an agreement with the European Research Commission (ERC) to provide South African researchers opportunities to pursue research collaboration with ERC grantholders.

SA is one of only five countries with an active agreement with the ERC.

The NRF, the UK's DFID and Canada's IDRC are collectively investing over the next five years to strengthen the capacity of African Science Granting Councils, including:

Burkina Faso, Ghana, Kenya, Uganda, Tanzania, Rwanda, Ethiopia, Côte d'Ivoire, Malawi, Mozambique, Namibia, Senegal, Zambia and Zimbabwe.

The initiative aims to support research and evidence-based policies that will contribute to economic and social development.

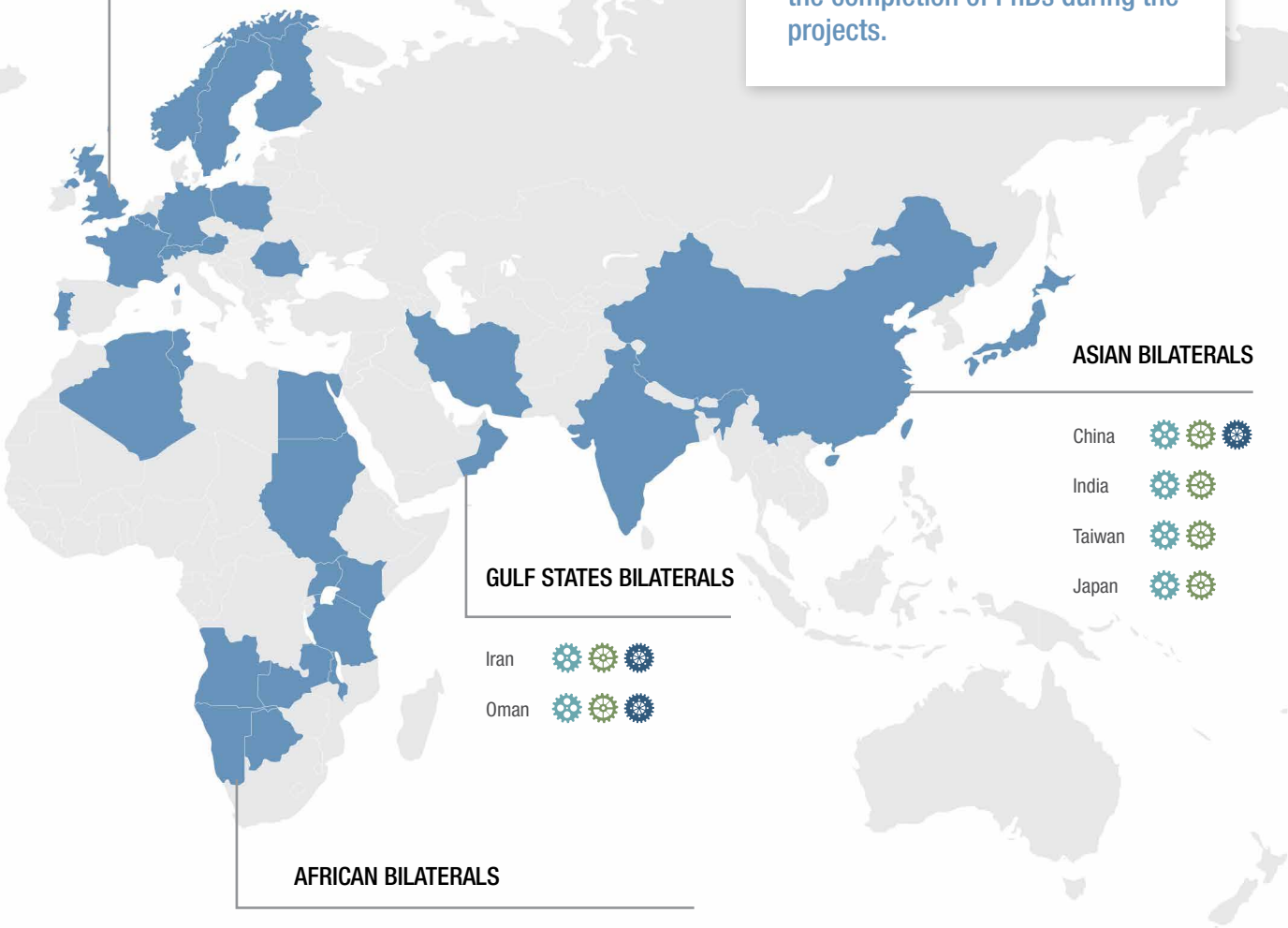
EUROPEAN BILATERALS

United Kingdom	France
Norway	Poland
Switzerland	Austria
Germany	Portugal
Sweden	Romania
Finland	Belgium

The renewed Phase III of the

Swiss-SA Joint Research Programme (SSAJRP)

aims to support longer-term joint research projects of four years, with a dedicated research focus, and increased funding to allow for the completion of PhDs during the projects.



ASIAN BILATERALS

- China
- India
- Taiwan
- Japan

GULF STATES BILATERALS

- Iran
- Oman

AFRICAN BILATERALS

Angola	Kenya
Algeria	Uganda
Malawi	Egypt
Namibia	Tanzania
Zambia	Tunisia
Botswana	Sudan

Type of engagement:

- Strategic
- Academic
- Political

9.5 Performance against Objective 3: Leading-edge research and infrastructure platforms

9.5.1 Research platforms

Human capacity development and knowledge generation hinge on access to cutting-edge research and technology platforms. The NRF provides access through equipment and mobility grants. To name a few, the NRF has brokered access to the following world-class platforms:

- European Synchrotron Radiation Facility (ESRF);
- European Organisation for Nuclear Research (CERN), including the Large Hadron Collider (LHC); and
- Joint Institute for Nuclear Research (JINR).

In addition, the NRF is funding the acquisition of leading-edge infrastructure through the National Equipment Programme (NEP) and the National Nanotechnology Equipment Programme (NNEP). These are competitive multi-year funding instruments awarded to institutions to improve their research platforms. The grant recipients are expected to consider the total cost of ownership in applying for funding for new equipment, including the transfer of knowledge and skills. The training of skilled operators and technicians is paramount for the optimal maintenance and functionality of high-end equipment and should be factored into the sustainability planning.

A total of 32 grant awards were made, 23 for NEP and nine for NNEP. Black researchers made up 37.5% of the recipients, and female researchers constituted 18.7% due to very low numbers of applications from these designated groups. The overall target for infrastructure and platform provisioning was not achieved. Delays in spend can be attributed to:

- Internal tender processes at HEIs, which have led to delays in the uptake of the funds by institutions;
- Long lead times to build tailor-made and highly specialised state-of-the-art equipment; and
- The foreign exchange rate fluctuations over the past financial year, which have posed a challenge to institutions in terms of sourcing additional funds to procure the equipment from overseas suppliers.

The NRF recently secured re-prioritised funding from the DST to aid institutions in addressing the challenges associated with the weakened Rand.

Table 12: Programme 3 objectives and KPIs against budget – 2015/16: Leading-edge research and infrastructure platforms

Leading-edge research and infrastructure platforms

STRATEGIC OBJECTIVE 3 → **Establish and maintain research infrastructure and platforms**

Objective Statement: Provide and facilitate access to world-class equipment and infrastructure through the acquisition of high-end equipment and the support of National Research Facilities.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Number of users of equipment funded by the NEP and NNEP programmes	1 800	2 360	31%	During the reporting period the application requirements were refined to ensure that grantholders report on all users, including students and collaborators which increased the number of users recorded.
Number of publications emanating from the usage of equipment funded by the NEP and NNEP programmes	2 000	1 105	-45%	The number of publications were adversely affected due to extended procurement processes experienced by grantholders. The delays resulted in key equipment not being ready to support research outputs.
BUDGET (Rm)	**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Platform and infrastructure provision	297.60	251.52	-46.08	The variance is due to an additional allocation of R35.9m from the DST.

9.5.2 Strategic Research Equipment Programme (SREP)

This new funding instrument supports the national strategic research infrastructure investments. SREP complements the implementation of the South African Research Infrastructure Roadmap (SARIR), which is geared towards nurturing a system-wide approach to research infrastructure investments, and establishing research infrastructures in the medium to large range. Up to 10% of the annual NEP budget will be allocated for this new competitive research infrastructure grant, in support of one project at a minimum of R15m and up to a maximum of R35m over a two-year funding period.

9.6 Performance: Special projects

The NRF is the custodian of the following special projects through Programme 3:

- Research Information Management System (RIMS); and
- DST/NRF Internship Programme.

9.6.1 Research Information Management System (RIMS)

The RIMS project is an initiative funded by the DST. RIMS provides the science councils and HEIs with two key components of a research information management system, namely:

- The Research Administration System, which supports administrative best practice through a modularised administration system based on proprietary software customised for the South African environment; and
- The RIMS Business Intelligence System, which collects and stores information pertaining to publicly funded research in a confidential environment per institution. The RIMS business intelligence system:
  - Allows HEIs to benchmark against other institutions at an aggregated level; and
  - Provides the DST and its counterparts with a view of the impact of publicly funded research and the return on investment.

RIMS further provided the following service offerings:

- DHET Research Outputs Submissions System: RIMS developed a reporting tool to simulate the DHET research output submission business processes and thus facilitate DHET/institutional reporting.
- In preparation for the 2016 research output submissions and managing the challenges of the Version 13 E upgrade, the core RIMS team continued giving dedicated support to participating institutions.

The RIMS financial position is still under pressure. Multiple engagements with Universities South Africa (USAF) have not yielded a decision on sustainable funding, which is a key risk to the sustainability of the system. In the fourth quarter, the DST was able to provide an additional R5.07m to offset some of the unfunded operational programmes.

9.6.2 DST/NRF Internship Programme

The aim of this programme is to:

- Establish and increase a pool of skilled human resources for the public and private sectors, science councils, science institutions and the National System of Innovation;
- Provide university graduates and postgraduates with work experience in SET fields commensurate with their qualifications, thus increasing their chances of employment;
- Provide SET graduates and postgraduates with exposure to research and development projects that are critical to the NSI; and inspire them to pursue careers in the NSI; and
- Build capacity in research management at higher education institutions (HEIs) and research institutions throughout the country.

A total of 728 interns were enrolled in the programme and were placed at various participating host institutions throughout the country to be trained under the guidance of experienced mentors. **Figure 20** presents the number of interns placed in HEIs, science institutions, science councils and industry.

A total of 571 interns commenced their internships on 1 April 2016 at various participating host institutions throughout the country, while the remaining 79 interns were expected to start on 1 May 2016.

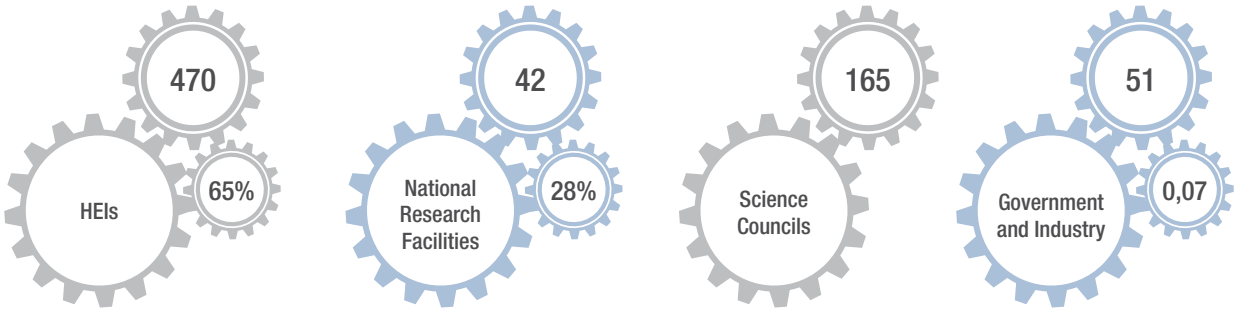
A number of interns were absorbed into the workplace, indicating their readiness and attractiveness to prospective employers, while others exited the programme to further their studies. A total of 337 (46%) interns exited the programme to take up opportunities elsewhere, with 110 (15%) joining the workforce and 227 (31%) pursuing further studies.

The NRF is funding 227 interns – comprising 72 honours, 132 master's and 23 doctoral students – in furthering their studies through the Innovation Bursary Scheme.

For the 2016/17 placements, a total of 12 867 applications were received, of which 10 100 were eligible for appointment. The process of recruiting and placing new interns for the 2016/17 financial year is being finalised and the target is to place 650 interns within the available budget.

The majority of interns were placed at the universities (65%), while 28% were placed at the National Research Facilities and other Science Councils. The remaining students were placed in governemnt or industry. These placements contribute to a well trained future workforce.

Figure 20: Distribution of the 2015/16 intern cohort across various institutions



10 INTRODUCTION TO NATIONAL RESEARCH FACILITIES

The National Research Facilities, declared by the Minister of Science and Technology in accordance with the NRF Act, are created to provide a critical mass of equipment, cutting-edge platforms and researchers in support of domain-specific research, human capacity development and knowledge generation.

The main criteria for the evaluation and establishment of National Research Facilities are:

- A unique position in South African knowledge production;
- Offer of core technologies, research methodology or data pools/collections should meet international standards;
- Goals should be well aligned with the overall objectives of the NSI, especially with regard to the diffusion of new knowledge;
- A critical mass of equipment, skills and users;
- Potential for networking and for attracting international collaborators to South Africa;
- Ability to provide opportunities for human resource development with special efforts to involve researchers from formerly disadvantaged communities; and
- Ability to provide opportunities for the advancement of science and for the interface between science and society (please refer to Programme 2 for details).

The National Research Facilities (NFs) support the National Research and Development Strategy by exploiting geographic and knowledge advantage areas that are unique to Southern Africa. The NFs 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. The National Research Facilities also contribute to the NRF strategic goal of growing a representative research workforce through focused HCD initiatives.

The education and training mandates of the NFs enrich and empower individuals to function as productive knowledge workers. Programme 4 represents the National Research Facilities in the Nuclear Sciences (iThemba LABS), Biodiversity, Environmental and Conservation Sciences (SAIAB, NZG and SAEON). Programme 5 represents the National Research Facilities in Astronomy including SAAO and HartRAO, as well as the SKA SA project.

PROGRAMME 4

11 PROGRAMME 4: NATIONAL RESEARCH FACILITIES EXCLUDING ASTRONOMY

SITUATIONAL ANALYSIS

The National Research Facilities of Programme 4 provide cutting-edge research platforms for Nuclear, Biodiversity, Environmental and Conservation Sciences.

OPERATIONAL DIVISIONS

iThemba LABS	iThemba Laboratory for Accelerator Based Sciences
NZG	National Zoological Gardens of South Africa
SAIAB	South African Institute for Aquatic Biodiversity
SAEON	South African Environmental Observation Network

PERFORMANCE

The National Research Facilities of Programme 4:

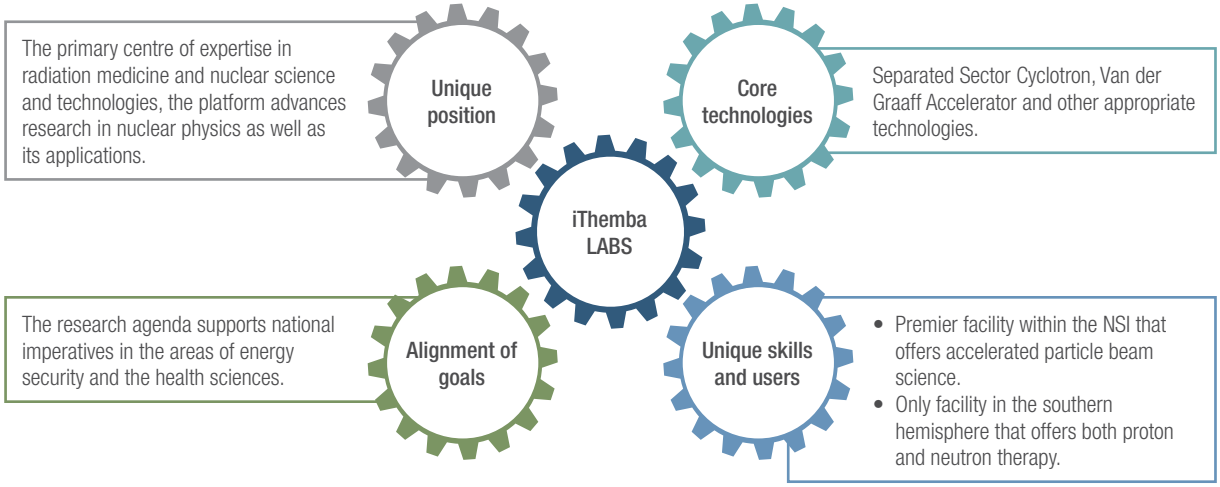
- Promote globally competitive research and innovation;
- Enhance strategic international engagements; and
- Establish and maintain research infrastructure and platforms.

11.1 Value proposition of the primary research platforms

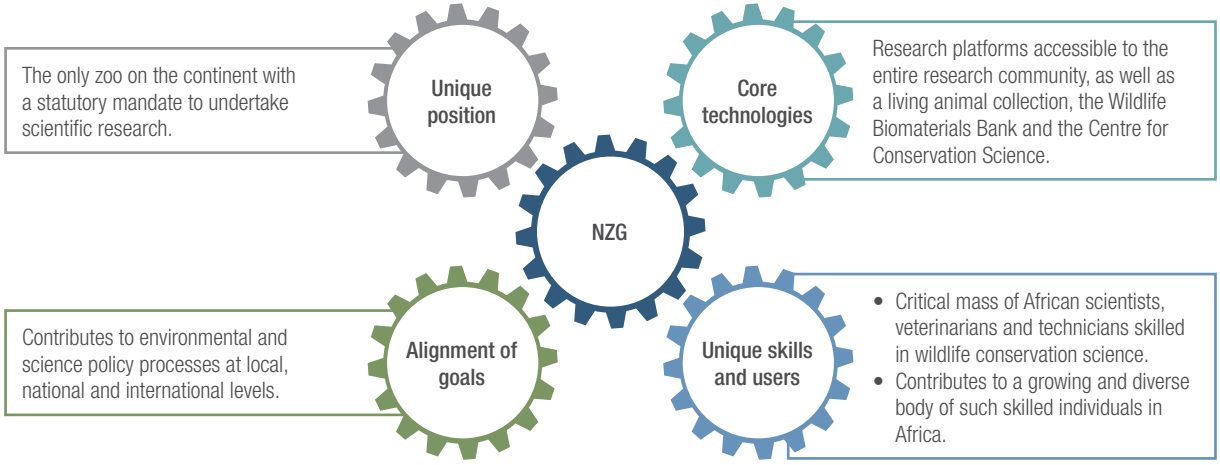
Collectively, the National Research Facilities act as custodians of a number of national research platforms in key priority areas. This ensures that the national research agenda can be preserved through dedicated research by specialised staff members based at the NFs. This custodianship is a multifaceted task, but in essence includes maintenance, upgrading, adaptation and development of the platforms to ensure that they remain technologically relevant while facilitating internationally competitive and leading-edge research at all times.

In addition, and reported on under sections 11.2 – 11.3, the National Research Facilities facilitate networking and collaboration with international collaborators, and provide opportunities for human resource development, with special efforts to develop researchers from formerly disadvantaged communities.

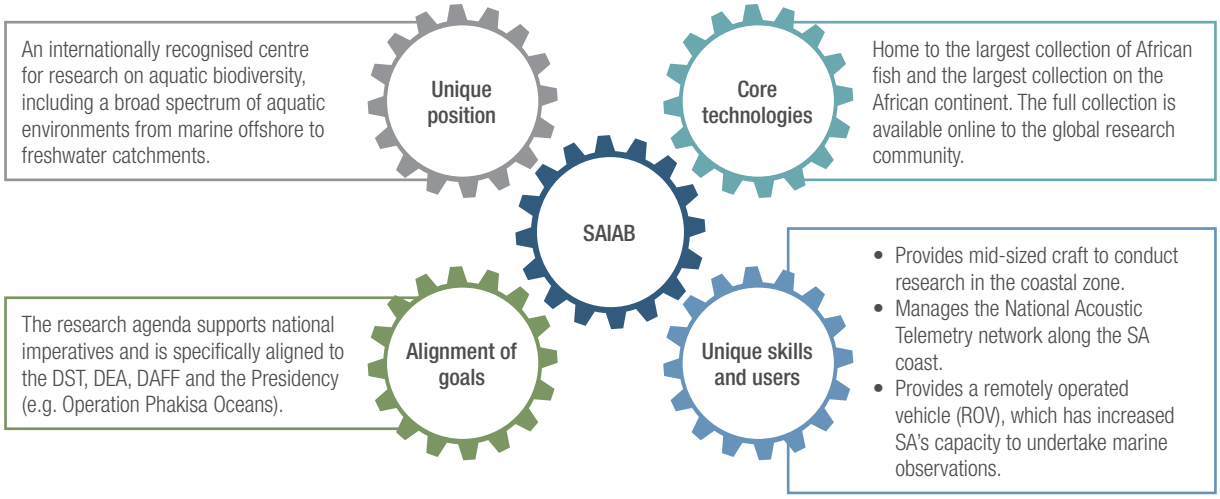
11.1.1 iThemba Laboratory for Accelerator Based Sciences (iThemba LABS)



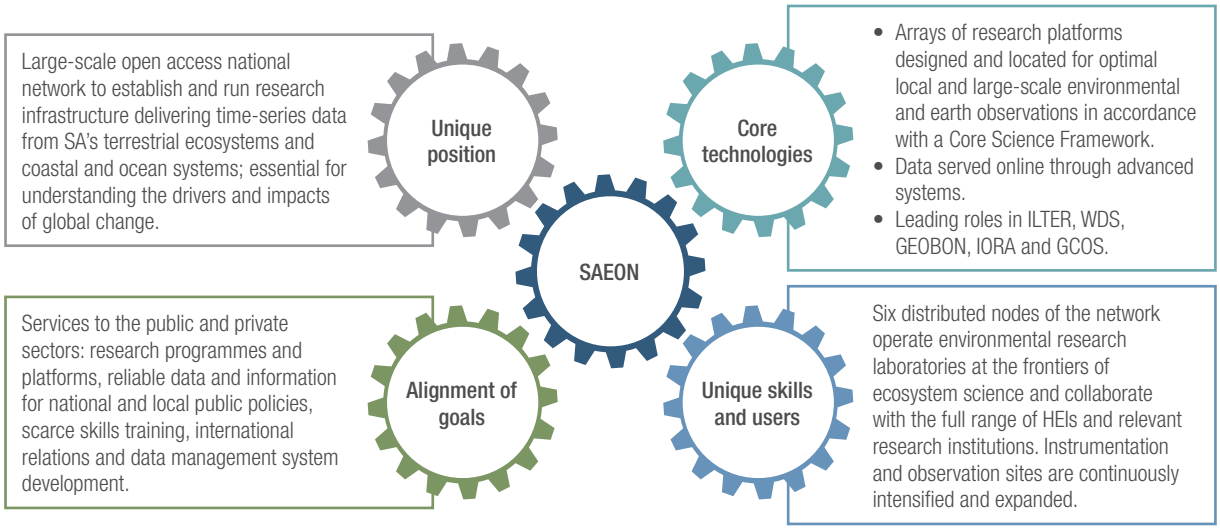
11.1.2 National Zoological Gardens of South Africa (NZG)



11.1.3 South African Institute for Aquatic Biodiversity (SAIAB)



11.1.4 South African Environmental Observation Network (SAEON)



11.2 Performance against Objective 1: Promote globally competitive research and innovation

The NFs in Programme 4 have performed well over the reporting period. Research in new fields is actively explored, whilst the investment in infrastructure has provided renewed impetus.

11.2.1 Human capacity development

The NFs in Programmes 4 supported 460 postgraduate students, thereby exceeding their annual target by 19%. This exceptional performance was partly due to SAEON supporting additional students on account of an increase in supervisory capacity. The Programme directly supervised 282 postgraduate students, of whom 56% were black and 48% female. The NFs support research through access to cutting-edge infrastructure and data as a product of their science operations. To this end, the NFs in Programme 4 supported 1 223 users of the research platforms.

11.2.2 Knowledge generation

Over the reporting period, the NFs in Programme 4 published 278 ISI (Web of Science) publications, exceeding the target by 39%. The overall citation impact for the Programme was 1.25, with iThemba LABS performing exceptionally well with an impact rating of 1.51.

Scientific research highlights include the following:

- SAIAB in collaboration with SAEON, Rhodes University, NMMU and DAFF performed a multidisciplinary review of the influence of global change on the coastal biota of South Africa.
- iThemba LABS co-authored the first paper emanating from the climate change project involving a novel application of stable light isotope analyses. The isotope was used for carbon dating on ancient Baobab tree rings to determine rainfall patterns of a thousand years ago. This publication was a collaboration between iThemba LABS, UP, SANParks, Babes Balayi University in Romania, University of Swansea, UCT, the Namibian Polytechnic and the University of Botswana and resulted in articles in *Mail & Guardian* and *The Times*, as well as live interviews. This publication was the first record of its kind for Southern Africa.
- SAEON is involved in the government's Strategic Environmental Assessment project for the shale gas exploration phase in the Karoo with a view to long-term monitoring of the impacts. SAEON has also been requested by the DEA to join the Strategic Environmental Assessment for the expansion of the SKA phase I project.
- SAIAB is leading the SANBI project on the inventory of freshwater fishes for the multidisciplinary Karoo BioGaps initiative. The project aims to mobilise foundational biodiversity data to support the Strategic Environmental Assessment for shale gas development and other potential infrastructure development projects in the Karoo basin. The current lack of biodiversity data will be addressed by integrating and upgrading existing species data located in museums and herbaria, and conducting detailed surveys in areas targeted for shale gas exploration.
- The NZG was involved in identifying genetic similarities discovered between South African and Zimbabwean rhino populations that may enable free movement of rhinos between the countries without negatively impacting the gene pools. This could assist in conservation efforts to safeguard the future of the species.

NZG DNA analysis capabilities – pangolin scales

The Hong Kong CITES authority confiscated 3.3 tonnes of pangolin scales that was thought to originate from Africa. The NZG was approached to conduct barcoding on confiscated samples. Pangolins are the only scaled mammals, and it is estimated that 100 000 are captured across Africa and Asia every year, making them the most hunted species in the world. Sixty percent of the sample was of African origin and 40% of Asian origin. Confirming the origin of confiscated contraband assists the authorities in understanding the operating patterns of poaching syndicates.

Table 13: Programme 4 objectives and KPIs against budget – 2015/16: Promote globally competitive research and innovation

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Number of postgraduate students supported by the National Research Facilities	386	460	19%	SAEON supported 25 additional students due mainly to the increase in postdoc supervisory capacity and the ASCA project.
ISI* publications at the National Research Facilities	200	278	39%	Several papers which were accepted in 2014 and only published in the 2015 academic year due to a lag at the publishing houses.
Number of users of National Research Facilities	1 112	1 223	10%	The increase is due to the higher number of students supported by the National Facilities as well as an increase in the number of external researchers using the facilities at iThemba LABS.
Citation impact of National Research Facility outputs (annual cumulative)	2	1.25	-38%	The target was not achieved. Though any impact rating above 1 indicates global relevance and quality, an impact rating of 2 is exceptional.
BUDGET (Rm)	**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Promote globally competitive research and innovation	130.96	151.63	-20.67	The variance was related to additional HCD costs at iThemba LABS and operating costs at SAEON in line with new contracts.

*Note that ISI is now known as 'Web of Science'.

11.3 Performance against Objective 2: Enhance strategic international engagements

The unique position of the National Research Facilities in Programme 4 makes them an intrinsic part of global research networks. The NFs brokered 67 joint international agreements over the reporting period in support of preserving their vibrant collaborations with counterparts.

Interesting collaborative projects include:

- The Agulhas System Climate Array, a SAEON project in collaboration with the Netherlands and the USA, was launched through a research cruise during which instruments were placed up to 4 km below the surface in the world's fastest-flowing current. This is a major advance in oceanographic research in South Africa.
- iThemba LABS concluded a new contract with Draximage in India to act as a third party between iThemba LABS and medical facilities in India. The company is responsible for the sales, marketing and distribution of Ge68/Ga68 generators. The generator is a medical device that contains a mother radionuclide (68Ge) on a column that decays to the daughter radionuclide (68Ga). With daily elutions of the generator column with a specific acid, the radionuclide 68Ga is removed. This, in turn, is generally labelled to organic compounds such as peptides. Once the labelled 68Ga-peptide is formulated (regarded as a radiopharmaceutical), it is injected into patients to detect neuroendocrine tumours.
- SAEON represented South Africa at various conferences and workshops on biodiversity in countries such as Poland, France, Mexico, Brazil, Chile, the Netherlands and the UK.
- The MoA to formalise South Africa's participation in projects at ISOLDE/CERN has been signed. iThemba LABS plays a key role in the ISOLDE collaboration, and this new partnership with CERN will contribute meaningfully to the iThemba LABS RIB project;
- iThemba LABS successfully hosted the first RSA-Algerian researchers' workshop sponsored by the DST/NRF, the Algerian DGRSDT, UNESCO and the Unisa Africa Chair in Nanosciences and Nanotechnology.

11.4 Performance against Objective 3: Leading-edge research and infrastructure platforms

Core to the success of National Research Facilities is the provision of unique platforms. The NRF has invested R72.8 million in the NFs in Programme 4 over the reporting period. In order to remain relevant and competitive, NFs require constant investment in equipment and infrastructure. Enhancements over the reporting period include the following:

- The SAIAB Molecular Genetics Laboratory sequencing capabilities were enhanced with the vision of developing a genomics hub in collaboration with Rhodes University.
- The new state-of-the-art eco-physiology laboratory is now fully operational at SAIAB, and several experiments have been concluded.
- SAEON installed a high-altitude weather station to complement the hydro-meteorological scientific observatory at Cathedral Peak in the Drakensberg. This weather station will make data available to researchers and students from SAEON and collaborating universities (UKZN and others).
- Equipment for the NZG forensic centre has been procured and work is under way on the infrastructure upgrade.
- The iThemba LABS multi-functional optical platform (funded by an NRF NNEP grant) was successfully commissioned and will enhance the materials characterisation capabilities. The multi-functional and comprehensive non-destructive capabilities will open up collaboration opportunities with strategic national R&D collaborators and priority programmes such as the South African National Space Agency (SANSA) and the Solar Park National Programme.
- The first steps have been taken towards reducing the high electricity costs at iThemba LABS. A UPS solar charging project has been launched and will be expanded in the future.

Table 14: Programme 4 key performance indicators against budget – 2015/16: Enhance strategic international engagements

An internationally competitive and transformed workforce

STRATEGIC OBJECTIVE 2 → Enhance strategic international engagements

Objective Statement: Promote system-wide international engagement and collaboration in order to support emerging knowledge fields and provide local researchers with access to innovative research infrastructure.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Number of joint international agreements at the National Facilities	60	67	12%	The variance is due to a higher number of collaborations initiated by SAEON.
BUDGET (Rm)	**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Internationalisation	11.75	15.01	-3.26	The variance is due to earlier payment of CERN membership fees.

Table 15: Programme 4 objectives and KPIs against budget – 2015/16: Leading-edge research and infrastructure platforms

Leading-edge research and infrastructure platforms

STRATEGIC OBJECTIVE 3 → **Establish and maintain research infrastructure and platforms**

Objective Statement

Provide and facilitate access to world-class equipment and infrastructure through the acquisition of high-end equipment and the support of National Research Facilities.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Total infrastructure investment in the National Research Facilities (Rm)	75.67	87.00	15%	Acceleration of expenditure occurred for the procurement of site-monitoring equipment and vehicles at SAEON. Also expenditure on infrastructure at iThemba LABS increased due to the replacement of equipment damaged during a fire three years ago. There has been an increase in payout to offset all expenditure related to the replacement of damaged equipment and infrastructure.
BUDGET (Rm)	**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Platform and infrastructure provision	278.13	293.79	-15.66	The variance is due to the completion of delayed infrastructure projects at iThemba LABS, SAEON and SAIAB.

PROGRAMME 5

12 PROGRAMME 5: NATIONAL RESEARCH FACILITIES – ASTRONOMY INCLUDING SKA SA

SITUATIONAL ANALYSIS

The National Research Facilities and the SKA SA project in Programme 5 provide cutting-edge research platforms for multiwavelength astromony.

OPERATIONAL DIVISIONS

HartRAO	Hartebeesthoek Radio Astronomy Observatory
SAAO incl. SALT	South African Astronomical Observatory including the Southern African Large Telescope
SKA SA	Square Kilometre Array South Africa

PERFORMANCE

The National Research Facilities – Astronomy including SKA SA:

- Promote globally competitive research and innovation;
- Enhance strategic international engagements; and
- Establish and maintain research infrastructure and platforms.

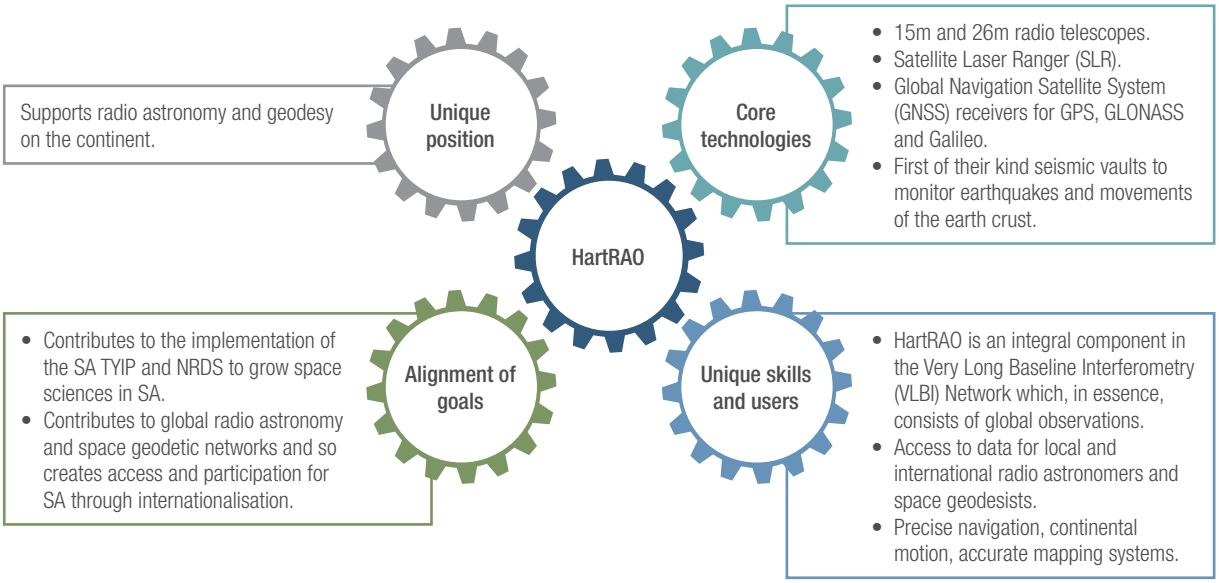
12.1 Value proposition of the primary research platforms

Collectively, the business units of Programme 5 provide platforms in support of multiwavelength research on the continent. The DST developed the National Strategy for Multiwavelength Astronomy and the NRF developed the strategy implementation plan, both of which were approved by the Minister of Science and Technology and the DST Executive Committee subject to the availability of funding on an annual basis. This strategy, together with the implementation plan, will be presented to Cabinet for endorsement in the next financial year.

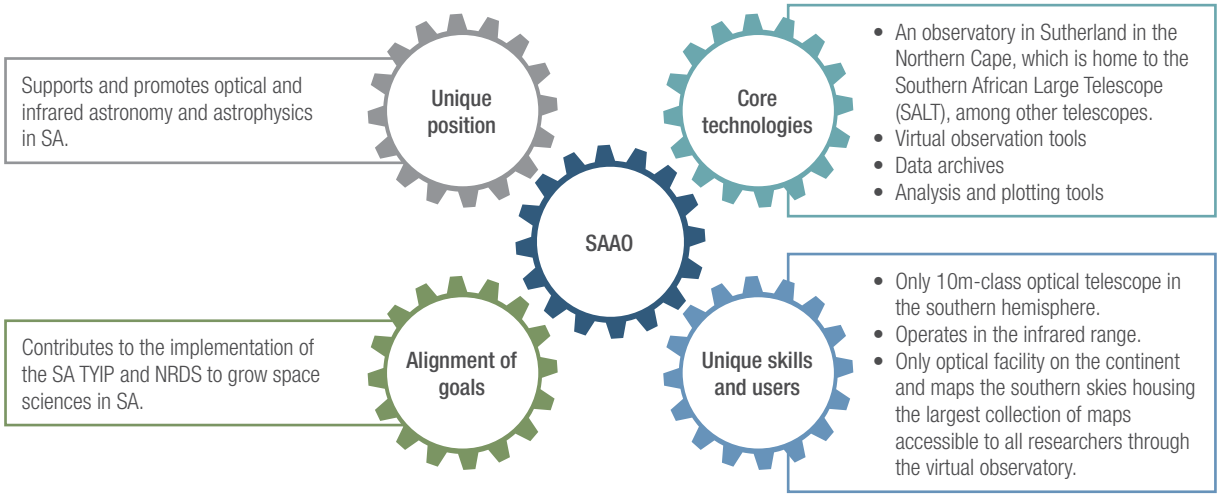
Programme 5 consists of two National Research Facilities, namely HartRAO and SAAO, and the SKA SA project. HartRAO supports both radio astronomy and space geodesy. SAAO is the only optical astronomy facility on the continent. SAAO is also a partner with the Southern African Large Telescope (SALT). The SKA SA project is a flagship programme established to further the long-standing South African policy of investment in astronomy research and development as an enabler of innovation, knowledge generation and economic growth. SKA SA is a key participant in the construction of the MeerKAT telescope, the international Square Kilometre Array project and the African Very Long Baseline Interferometry Network project, which form part of a global initiative to design and construct the world's largest radio telescope. The Minister of Science and Technology has directed the establishment of a consolidated radio astronomy observatory which will involve the incorporation of HartRAO and SKA SA as a National Research Facility under the NRF. A working group has been set up to drive this process, and to present a high-level business plan for the envisaged new radio astronomy observatory to the DST.

The business units of Programme 5 are discussed in more detail below in the context of their alignment with the criteria for declaring a National Research Facility.

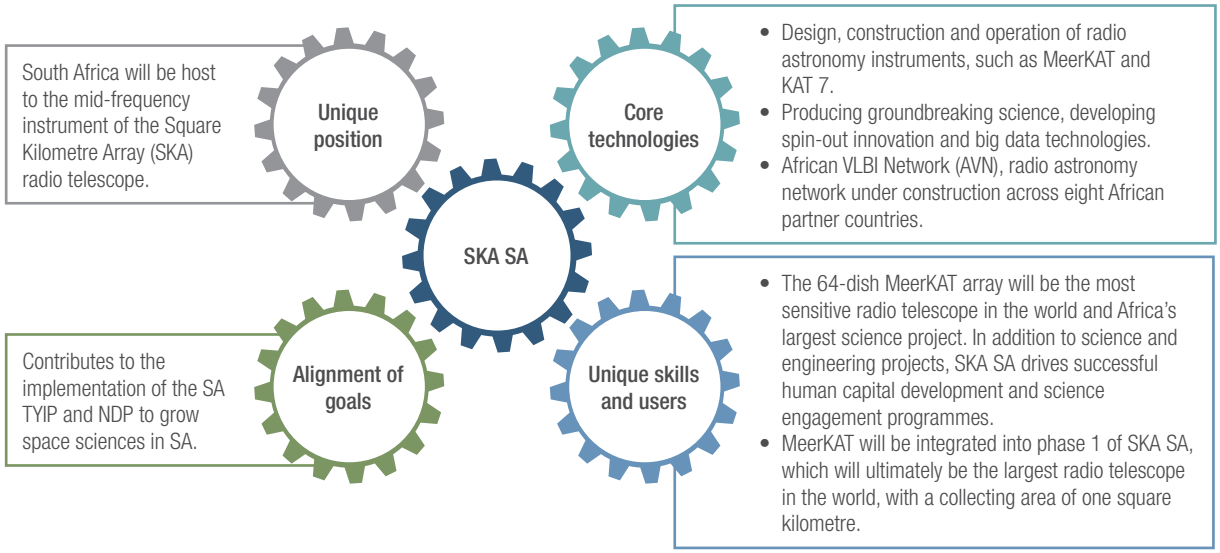
12.1.1 Hartebeesthoek Radio Astronomy Observatory (HartRAO)



12.1.2 South African Astronomical Observatory (SAAO)



12.1.3 Square Kilometre Array South Africa (SKA SA)



12.2 Performance against Objective 1: Promote globally competitive research and innovation

Programme 5 has performed well over the reporting period. Research in new fields is actively explored, whilst the investment in infrastructure has provided renewed impetus.

12.2.1 Human capacity development

Programme 5 supported 109 postgraduate students against an annual target of 119. The underperformance was related to the delay at HartRAO in the appointment of postdoctoral fellows with the appropriate skills set. The Programme directly supervised 88 postgraduate students, of whom 70% were black and 31% female. There has been an increase in platform users, with 137 users recorded against a target of 47. This is due to SAAO experiencing higher than anticipated volumes of telescope users. HartRAO took the decision to redefine its user base to incorporate recipients of VLBI data, which will significantly increase future user numbers.

12.2.2 Knowledge generation

Over the reporting period, Programme 5 published 136 ISI (Web of Science) publications with an average impact rating

of 1.33. The Programme exceeded its publication target by 5%. Scientific research highlights include the following:

- The infrared investigations of a nearby galaxy discovered at least 14 long period Mira variable stars. The discovery of this unusual phenomenon was made by SAAO in collaboration with Japan.
- Using both the SAAO 1.9m telescope and SALT spectroscopy, amateur astronomers found a peculiar-looking nebula in the Orion constellation in 2010. A recent collaboration of astronomers at SAAO and in England, Chile, Spain and Mexico discovered the origins of the nebula, which seems to have been formed in a stellar explosion just over 1 500 years ago according to ancient Chinese records. This is a particularly rare combination of star and nebula, with only two other examples known. Discoveries such as these are uniquely placed to tell us how the long-term evolution of similar stars takes place over thousands of years.
- One of the most important emerging VLBI applications is phase-referencing observations of spacecrafts. Nodding observations (switching between spacecraft and quasar) of a spacecraft and nearby active galaxy nuclei (AGN) allow for the precise measurement of position. The goals of these observations are to determine the absolute positions of spacecraft and to increase the number of ecliptic plane calibrators in order to reach nanoradian accuracy of phase-referencing observations of spacecraft. This project is being undertaken in collaboration with Shanghai Observatory and has been accepted by the European VLBI Network (EVN).

Table 16: Programme 5 objectives and KPIs against budget – 2015/16: Promote globally competitive research and innovation

An internationally competitive and transformed workforce

STRATEGIC OBJECTIVE 1 → Promote globally competitive research and innovation

Objective Statement: Driving research competitiveness through the support of high-quality research and innovation, as well as the generation of knowledge and development of human capacity in critical areas.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Number of postgraduate students supported by the National Research Facilities	119	109	-8%	HartRAO could not find suitable postdoctoral fellows to appoint to provide the supervisory capacity necessary for a portion of its postgraduate student support.
ISI* publications at the National Research Facilities	130	136	5%	Several papers which were accepted in 2014 were only published this year due to a lag at the publishing houses.
Number of users of National Research Facilities	47	137	191%	The variance is due to SAAO experiencing higher than anticipated volumes of telescope users.
Citation impact of National Research Facility outputs (annual cumulative)	2	1.33	-34%	The target was not achieved. Though any impact rating above 1 indicates global relevance and quality, an impact rating of 2 is exceptional.
BUDGET (Rm)	**Annual Budget**	**Actual**	**Variance**	**SUMMARY COMMENT ON VARIANCE**
Promote globally competitive research and innovation	109.29	104.32	4.97	The lower expenditure is due to decreased activity in SKA SA while the focus is on the completion of the MeerKAT antennas.

*Note that ISI is now known as 'Web of Science'.

12.3 Performance against Objective 2: Enhance strategic international engagements

The tip of the African continent offers a unique geographic location from which to observe the southern skies. The geographic advantage is not the only attractive aspect. In maximising the value of its geographic location, South Africa has a rich history of supporting the development of state-of-the-art science platforms and leading-edge research that confirms the country as a key component of the global astronomy network. As at end March 2016, the SKA SA project constructed 21 Meerkat dishes which are now on site at Carnarvon, in the Northern Cape.

Interesting collaborative projects include the following:

- The SAAO Sutherland observing site continues to attract proposals for additional guest facilities. Oxford University (UK) has joined the MeerLICHT consortium. An agreement was concluded with SANSA to deploy instruments at the site.
- The International Astronomical Union (IAU) renewed the contract to host the Office of Astronomy for Development at SAAO for an additional six-year term.
- HartRAO, in collaboration with the University of Luxembourg, built and prepared to install a GNSS tide gauge on the island of St Helena. This installation will be part of an international network of GNSS at tide gauge stations used to calibrate ocean-level measurements as part of the global effort to monitor changes in ocean levels. It will also be used for tsunami monitoring.
- A vital part of the effort towards building the SKA on the African continent is the African Very Long Baseline Interferometry (VLBI) Network (AVN). The AVN will support the development of the appropriate skills, regulations and institutional capacity needed in SKA partner countries to optimise continental participation in SKA pathfinder technology development. African partner countries include Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia. During the year under review, the AVN team prioritised the conversion of the 32m telecommunication antenna at Kutunse in Ghana. This is an intensive multidisciplinary engineering programme to realise a telescope system for the maser monitoring programme.

The first South African winner of the Edinburgh Medal is the NRF's Kevin Govender

This prestigious award is made to exceptional men and women in science and technology whose professional achievements have made a significant contribution to the understanding and well-being of humanity. The 2016 medal went jointly to Kevin Govender, who heads the Office of Astronomy for Development in South Africa, and to the International Astronomical Union (IAU) in recognition of their wide-reaching contributions to science.

The medal was awarded for the creation and practical establishment of the IAU Office of Astronomy for Development (OAD), which integrates the pursuit of scientific knowledge with social development for, and with, those most in need. The office, launched in 2011 by the Minister of Science and Technology, is hosted at the SAAO in partnership with the NRF and the DST. Under Kevin Govender's pioneering stewardship, the OAD has successfully harnessed astronomy in the service of global education and capacity building. The OAD was established as part of the IAU's decadal strategic plan 'Astronomy for Development', which was initiated and driven within the IAU by the renowned astronomer Prof. George Miley.

Table 17: Programme 5 objectives and KPIs against budget – 2015/16: Enhance strategic international engagements

An internationally competitive and transformed workforce

STRATEGIC OBJECTIVE 2 → Enhance strategic international engagements

Objective Statement: Promote system-wide international engagement and collaboration in order to support emerging knowledge fields and provide local researchers with access to innovative research infrastructure.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Number of joint international agreements at the National Research Facilities	30	45	50%	The additional agreements are related to new agreements signed by SAAO with Japan, Korea and the UK. SKA SA also signed a number of agreements, including one with the prestigious Max Planck Institute.

BUDGET (Rm)	Annual Budget	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Internationalisation	387.92	153.49	243.43	The variance is due to slow progress with negotiations with International SKA Office on phase I, resulting in fewer than planned international trips and the call for technical projects work packages being delayed. AVN expenditure was influenced by committed funding from Ghana not being received and delays in shipping of equipment due to challenges with customs clearance.

12.4 Performance against Objective 3: Leading-edge research and infrastructure platforms

Providing truly world-class and, in the case of SKA SA, innovative leading-edge science platforms in support of multiwavelength astronomy is a national strategic imperative in line with the NRDS and the TYIP. Over the period under review, the NRF continued to support platform provisioning within the astronomy sector:

- The spectrograph for the 1.9m telescope at SAAO was upgraded.
- Many of HartRAO's projects support geo-hazard monitoring (seismicity, tsunamis, ocean-level change) and therefore directly provide social and economic interaction at a global level. Plans are being made to set up an automated processing centre (in collaboration with GFZ, Potsdam and Tshwane University of Technology), which will provide geo-hazard warnings by utilising seismic, tide gauge and geodetic data. The project will be completed in 2016.
- Twenty MeerKAT dishes have been installed on site, with two additional pedestals installed and the third delivered to the site. The first image was received through a test run using the first four dishes.
- The Inter-University Centre for Data Intensive Astrophysics (IDIA) has now been established at UCT, UWC, NWU and UP, with additional universities set to join in the near future. This will allow for South African scientists to be globally competitive in this new era of data-intensive research. An initial area of focus will be to provide support for the MeerKAT's large survey projects. Plans are in progress to initiate a national-level data facility for astronomical data, which will initially service MeerKAT before being expanded to include data from the National Research Facilities.
- SKA SA has appointed a professional team for the SKA land acquisition programme. A motivation for the bulk acquisition of land has been approved by the NRF Board and National Treasury. All affected landowners have been informed of the SKA land acquisition programme through an SKA SA appointed representative, with the aim of securing servitudes for the infrastructure required for the mid-frequency aperture array (SKA1_MID).

SKA SA developing small businesses in the Northern Cape

Pre-construction phase

In 2013, SKA SA provided the opportunity to local industry and institutions with appropriate existing expertise to participate in the SKA pre-construction phase. Since inception of this project, R55m has been awarded to 14 small, medium and micro-sized enterprises (SMMEs).

80km road project

NMC Civils provided business and technical development training for local SMEs to equip SMMEs to compete for government-tendered contracts. The training included technical and administration aspects of construction as well as on-site training as a sub-contractor or junior foreman in order to complete an NQF 2 qualification upon completion.

SKA SA appointed a retired engineer to assist the municipalities of Kareeburg and Karee-Hoogland with the assessment of infrastructure, planning of maintenance and prioritisation of critical projects within budget. The engineer also assists local sub-contractors with planning, contracts, mentoring and reviewing of payment certificates.

The development of these skills will enable the SMMEs to qualify for loans from Absa, where necessary, to provide services and goods to the project.

Table 18: Programme 5 objectives and KPIs against budget – 2015/16: Leading-edge research and infrastructure platforms

Leading-edge research and infrastructure platforms

STRATEGIC OBJECTIVE 3 → Establish and maintain research infrastructure and platforms

Objective Statement: Providing and facilitating access to world-class equipment and infrastructure through the acquisition of high-end equipment and the support of National Research Facilities.

INDICATORS	Annual Target	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Total infrastructure investment in the National Research Facilities (Rm)	293.43	372.57	27%	The higher capex is due to the rollovers of incomplete infrastructure projects from the previous year. The figure also includes the financial write-off of the cost related to the access road between Carnarvon and the SKA SA site.

BUDGET (Rm)	Annual Budget	Actual	Variance	SUMMARY COMMENT ON VARIANCE
Platform and infrastructure provision	596.15	518.49	77.66	The variance is due to slow progress on expensing of access road sealing and lower payments received for MeerKAT receivers and dishes to the amount of R50m.

PART C:
COMPLIANCE

13 CORPORATE GOVERNANCE

The governance structures of the NRF consist of systems and processes that assist the NRF to be directed, controlled and held accountable. Legislation such as the NRF Act (No. 23 of 1998), the Public Finance Management Act (PFMA) (No. 29 of 1999 as amended) and the South African Companies Act (No. 71 of 2008) contributes to the compliance requirements of the entity, as do the various national and departmental frameworks, instructions and policies. In addition, the NRF applies leading governance practices by adhering to the requirements in the King Report on Corporate Governance for South Africa (King III).

13.1 Accountability structure

The NRF is accountable to Parliament through the Parliamentary Portfolio Committee (PPC) on Science and Technology. The Minister of Science and Technology is the Executive Authority in terms of the Public Finance Management Act (PFMA) (No. 29 of 1999 as amended), and the Accounting Authority is the NRF Board. The Board of the NRF delegates to the Chief Executive Officer to act as the Accounting Authority of the NRF. This structure is represented in **Figure 21**.

13.2 Parliamentary Portfolio Committee (PPC) on Science and Technology

The PPC maintains oversight of the NRF. During the 2015/16 financial year, the CEO and the NRF Corporate Executive Committee had two interactions with the PPC on Science and Technology, where the PPC considered:

- The NRF Annual Report for 2014/15 in September 2015.
- The NRF Annual Performance Plan (APP) 2016/17 to 2018/19 in March 2015.

Figure 21: Accountability structure of the NRF

13.3 Minister of Science and Technology as Executive Authority

The Honourable Mrs Naledi Pandor served as the Minister of Science and Technology during the period under review. **Table 19** lists the statutory documents submitted by the Accounting Authority during the 2015/16 financial year.

Table 19: Accountability documents submitted to the Minister of Science and Technology during 2015/16

Accountability report	Date of submission
Annual Report 2014/15	Presentation to the Minister – 15 September 2015
	Tabling in Parliament – 1 September 2015
Annual Performance Plan 2016/17 to 2018/19	Presentation to the Minister – 23 February 2016
	Tabling in Parliament – 5 March 2016
First Quarterly Report 2015/16	Submission to DST – 20 July 2015
Second Quarterly Report 2015/16	Submission to DST – 20 October 2015
Third Quarterly Report 2015/16	Submission to DST – 20 January 2016
Fourth Quarterly Report 2015/16	Submission to DST – 20 April 2016

13.4 NRF Board as Accounting Authority

The NRF Board is appointed by the Minister of Science and Technology, and is empowered through the NRF Act (No. 23 of 1998 as amended) and the Public Finance Management Act (PFMA) (No. 29 of 1999 as amended). In terms of these Acts, the NRF Board as the Accounting Authority emphasises stewardship and good governance.

The NRF Board:

- Provides strategic direction and guidance;
- Exercises oversight with respect to decision-making, financial and risk management, and operations of the NRF;
- Is the custodian and driver of the social and ethics agenda of the organisation; and
- Exercises oversight of the compliance environment that impacts the organisation.

13.5 NRF Board Charter

The functions of the Board of the public entity are outlined in the NRF Act and explicated in the Board Charter. The Board of the NRF has compiled a progressive Board Charter that outlines its role, responsibility and governance oversight. This document is available from the office of the NRF Corporate Secretary.

13.6 Shareholder Compact between Accounting and Executive Authorities

The Chairman of the Board and the Minister of Science and Technology agree annually on a schedule of performance targets for the organisation that are set out in the Shareholder Compact between the Accounting and Executive Authorities. The Shareholder Compact promotes good governance and is used as a management tool for the organisation. This agreement then forms the basis for quarterly and annual performance reporting.

13.7 NRF Board term of office

The term of office of the current NRF Board extends from 1 October 2014 to 30 September 2018.

13.8 Composition of the NRF Board

As at 31 March 2016, the NRF Board was constituted as set out in **Figure 22**.

Figure 22: Board members as at 31 March 2016

Dr Molapo Qhobela
Ex-officio Member

Prof. Loyiso Nongxa
Chairman
University of the Witwatersrand

Ms Gail Campbell
Zenex Foundation

Dr Peter Clayton
Rhodes University

Ms Joanne Yawitch
National Business Initiative

Prof. Murray Leibbrandt
University of Cape Town

Advocate Louise Zondo
Bertha Gxowa Foundation

Mr Ronny Lubisi
MRL Chartered Accountants

Prof. Sunil Maharaj
University of KwaZulu-Natal

Prof. Tinyiko Maluleke
University of Pretoria

Prof. Mala Singh
Rhodes University

Prof. Ari Sitas
University of Cape Town
(Resigned
18 January 2016)

Prof. Errol Tyobeka
Namibia University of Technology

Ms Mpho Letlape
University of Johannesburg

13.9 NRF Board members with board directorships

Additional directorships held by NRF Board members are shown in **Table 20**.

13.10 Competencies of NRF Board members

The competencies and experience of Board members are summarised in **Table 20**.

Table 20: NRF Board members with board directorships

Board member	Additional directorships	Highest qualification	Areas of expertise
Prof. L Nongxa (Chairman of the NRF Board)	• Tertiary Education and Research Network of South Africa (TENET) • Rothschild (South Africa) (Pty) Ltd • Rothschild South Africa Foundation • Telkom Foundation • BP South Africa Education Foundation	PhD	• Mathematics • Higher education management
Ms GM Campbell	• GDE Science Education Centre t/a Sci-Bono Discovery Centre • Gauteng Education Development Trust • KwaZulu-Natal Education Development Trust • Zenex Foundation • Independent Philanthropy Association of SA (PASA)	B.SocSci (Social Work) Hons	• Corporate social
Dr P Clayton	• African Journals Online • GBS Mutual Bank • Rhodes University (Executive Council member)	PhD	• Research and development • Higher education management
Ms M Letlape	• Lethushane (Pty) Ltd • T-Systems South Africa • SAWID (Trustee)	Master's (currently busy with PhD)	• Procurement • Human resource management and STEM education • Governance
Mr MR Lubisi	• Jungle Babies Shop • MRL Human Capital • MRL Auditing Services • MRL Development Project • MRL Electrical & Consulting • Siyaraga Accounting Services	Chartered Accountant (CA)	• Corporate accounting services
Prof. SD Maharaj	• Council of the Academy of Science of South Africa • University of KwaZulu-Natal Retirement Fund	PhD	• General relativity • Cosmology • Relativistic astrophysics
Prof. T Maluleke	• Board of Khulumani (NGO)	PhD	• Theology • Higher education management
Dr V Papu-Zamxaka	• Sci-Bono Discovery Centre	PhD	• Public health
Prof. R Singh	• Council of Higher Education (CHE) • Council of University of KwaZulu-Natal (UKZN) • Council of the Nelson Mandela Metropolitan University (NMMU)	DPhil	• International higher education policy • Comparative higher education • Quality assurance in higher education
Prof. A Sitas	• Resigned from the NRF Board on 18 January 2016		
Prof. E Tyobeka	• Namibia University of Technology	PhD	• Biochemistry
Ms J Yawitch	• National Business Initiative • Trustee on the Boris Yawitch Trust • Chairperson of the South African National Parks Board	MSc	• Agricultural development • General management
Advocate L Zondo	• Bertha Gxowa Foundation • Afrigrow • Oxfam South Africa • SA Airlink (Pty) Ltd	LLM	• Public law • Economics and political science
Prof. M Leibbrandt		PhD	• Development economics • Poverty, inequality and labour markets

13.11 NRF Board committees – purpose and composition

The NRF Board appointed four standing committees to deal with relevant issues on a regular basis:

- Audit and Risk Committee;
- Remuneration and Human Resources Committee;
- Research Development Committee (established in November 2015); and
- Procurement Committee.

13.11.1 Audit and Risk Committee

The Audit and Risk Committee ensures that the assurance coverage provided by management is optimised, and adequately focuses on priority areas. The committee plays an integral role in the risk management of the organisation and oversees the annual risk-based internal audit in terms of the King Report on Corporate Governance for South Africa (King III). The committee engages with the external audit initiated by the Auditor-General in line with the PFMA (No. 29 of 1999 as amended). The committee also evaluates the organisation's integrated reporting with a specific focus on:

- Financial reporting;
- Risk management;
- Internal controls;
- Fraud risk as it relates to financial reporting; and
- IT governance.

The Audit and Risk Committee adopted formal terms of reference in line with the requirements of Section 51 (1) (a) of the PFMA (Act No. 29 of 1999 as amended) and Treasury Regulations 27.1.7 and 27.1.10. The committee discharged all its responsibilities for the year under review in line with the charter. During 2015/16, the committee held two meetings. For more information on the meetings held by the Audit and Risk Committee, refer to **Table 22**.

13.11.2 Remuneration and Human Resources Committee

The committee has adopted formal terms of reference and monitors the performance of the organisation in terms of human resources and remuneration. Through the committee, the Board, within the terms of the agreed policy, determines the scope of the remuneration packages of the executive and general staff, including, where appropriate, bonuses and incentive payment schemes; sets the CEO's performance contract; and oversees the general organisational climate and ethical conduct as well as any other matters formally delegated by the Board to the committee from time to time. During the 2015/16 financial year, this committee held two meetings. For more information on the meetings held by the Remuneration and Human Resources Committee, refer to **Table 23**.

13.11.3 Research Development Committee

At a meeting held on 13 November 2015, the members of the NRF Board resolved to establish a subcommittee, known as the Research Development Committee. The work of this subcommittee facilitates the effective exercise of the NRF Board's responsibility for oversight of the core mandate of the NRF to support research and research capacity development, facilitate science engagement and knowledge transfer, and advise the Minister on relevant research-related matters. The subcommittee operates according to an agreed terms of reference and has had two meetings during the reporting period.

13.11.4 Procurement Committee

This procurement subcommittee was formed mainly to facilitate the supply chain management requirements of the organisation considering the time-bound nature of some activities. The approved terms of reference allow the committee to consider and approve procurement requests above R10 million, and consider and recommend procurement requests over R20 million to the NRF Board in line with the delegation of authority framework. The committee has regular scheduled meetings, but can also convene at short notice should urgent matters require approval. The committee held three meetings during the 2015/16 financial year. Refer to **Table 24** for more information.

13.11.5 Meetings of the Board and its committees

The NRF Board met six times during the 2015/16 financial year. The Board met once during the reporting period for their annual strategic planning meeting. The dates and the attendance of members at those meetings are indicated in **Table 21**.

Table 21: Attendance of Board meetings: 1 April 2015 to 31 March 2016

Board members	21 July 2015 (Annual Strategic Planning Workshop)	22 July 2015	14 & 15 August 2015 (NRF CEO interviews)	13 November 2015	26 January 2016	30 March 2016
Prof. L Nongxa (Chairman)	✪	✪	✪	✪	✪	✪
Ms GM Campbell	✪	✪	✪	✪	✪	✪
Dr P Clayton	✪	✪	✪	✪	✪	✪
Prof. M Leibbrandt	✪	✪	✪	✪	✪	✪
Ms M Letlape	✪	✪	✪	✪	✪	✪
Mr MR Lubisi	✪	✪	✪	✪	✪	✪
Prof. SD Maharaj	✪	✪	✪	✪	✪	✪
Prof. T Maluleke	✪	✪	✪	✪	✪	✪
Dr V Papu-Zamxaka	✪	✪	✪	✪	✪	✪
Prof. R Singh	✪	✪	✪	✪	✪	✪
Prof. A Sitas	✪	✪	✪	✪	Resigned from NRF Board January 2016	
Prof. E Tyobeka	✪	✪	✪	✪	✪	✪
Ms J Yawitch	✪	✪	✪	✪	✪	✪
Advocate L Zondo	✪	✪	✪	✪	✪	✪
Dr B Damonse (Ex officio) (Acting CEO for period February to December 2015)	✪	✪	–	✪	–	–
Dr M Qhobela (Ex officio)	New NRF Chief Executive Officer (CEO) appointed as of 1 January 2016				✪	✪

✪ In attendance ✪ Absent with apology – Not an attending member

Table 22: Audit and Risk Committee meetings: 1 April 2015 to 31 March 2016

Board members	8 July 2015	19 October 2015	9 March 2016
Dr P Clayton (Chairman)	✪	✪	✪
Prof. M Leibbrandt	✪	✪	✪
Mr MR Lubisi	✪	✪	✪
Dr V Papu-Zamxaka	✪	✪	✪
Prof. L Nongxa (Ex officio)	–	–	–
Dr B Damonse (Acting CEO) (Invited member)	✪	✪	✪
Mr B Singh	✪	✪	✪
Dr M Qhobela	Joined NRF on 1 January 2016		✪

✪ In attendance ✪ Absent with apology – Not an attending member

Table 23: Remuneration and Human Resources Committee meetings: 1 April 2015 to 31 March 2016

Board members	Meetings			
	22 May 2015 Special Meeting CEO Search Committee	1 July 2015	28 October 2015	2 March 2016
Prof. E Tyobeka (Chairman)	✪	✪	✪	✪
Ms G Campbell	⊖	✪	✪	✪
Ms M Letlape	✪	✪	✪	✪
Prof. SD Maharaj	✪	⊖	✪	✪
Ms J Yawitch	⊖	✪	✪	✪
Prof. M Singh (Co-opted member)	✪	–	–	–
Prof. L Nongxa (Ex officio)	✪	–	–	–
Dr B Damonse (Invited member)	–	✪	✪	–
Mr P Thompson (Invited member)	✪	✪	✪	✪
Dr M Qhobela (Invited member)	Joined NRF on 1 January 2016			✪

✪ In attendance ⊖ Absent with apology – Not an attending member

Table 24: Procurement Committee meetings: 1 April 2015 to 31 March 2016

Board members	22 April 2015	2 July 2015	28 September 2015
Advocate L Zondo (Chairman)	✪	✪	✪
Dr P Clayton	✪	✪	✪
Prof. E Tyobeka	✪	✪	✪
Prof. L Nongxa	⊖	As per a resolution taken by the NRF Board at the July 2015 meeting, the Chairman is no longer a member of the Procurement Committee	
Dr B Damonse (Acting CEO) (Invited member)	✪	✪	✪
Mr B Singh (Invited member)	✪	✪	✪
Dr M Qhobela (Invited member)	Joined NRF on 1 January 2016		

✪ In attendance ⊖ Absent with apology

Table 25: Research Development Committee meetings: 1 December 2015 to 31 March 2016

Board members	27 January 2016	2 March 2016
Prof. R Singh (Chairman)	✪	✪
Prof. T Maluleke	✪	✪
Ms J Yawitch	✪	✪
Dr M Qhobela (Invited member)	✪	✪
Dr B Damonse (Invited member)	✪	✪
Dr G Pillay (Invited member)	✪	✪
Mr B Singh (Invited member)	✪	✪

✪ In attendance ✪ Absent with apology

13.11.6 Remuneration of the Board

The remuneration of the NRF Board is determined in line with the National Treasury guidelines. The NRF Board was categorised as level A1 for the financial year under review. **Table 26** offers a summary of the remuneration of the Board for the financial reporting period.

Table 26: Remuneration of Board members (2015/16)

Name	Remuneration	Other allowances	Other reimbursements	Total
Ms GM Campbell	R51 120.00	–	–	R51 120.00
Dr P Clayton	R77 664.00	–	–	R77 664.00
Prof. M Leibbrandt	R64 872.00	–	–	R64 872.00
Ms M Letlape	R30 672.00	–	–	R30 672.00
Mr MR Lubisi	R69 984.00	–	–	R69 984.00
Prof. SD Maharaj	R69 984.00	–	R 2 880.00	R72 864.00
Prof. T Maluleke	R34 904.00	–	–	R34 904.00
Prof. L Nongxa	R126 672.00	–	R 1 137.96	R127 809.96
Dr V Papu-Zamxaka	R59 760.00	–	–	R59 760.00
Prof. R Singh	R60 112.00	–	–	R60 112.00
Prof. A Sitas	Resigned from NRF Board January 2016			–
Prof. E Tyobeka	R78 856.00	–	–	R78 856.00
Ms J Yawitch	R49 888.00	–	–	R49 888.00
Advocate L Zondo	R63 520.00	–	–	R63 520.00

It should be noted that Board members are not paid a daily allowance when travelling for NRF purposes. However, all travel costs (such as airfares and car hire) are covered by the NRF. 'Other reimbursements' include actual costs incurred by Board members for incidental expenses such as airport parking costs, toll fees, Gautrain fares and use of personal vehicles (reimbursed per kilometre as per NRF travel policies).

13.12 NRF organisational structure

The CEO and the Corporate Executive Committee, supported by Programme 1, provide an enabling governance and compliance structure that ensures that the organisation meets its mandate, while operating within an established control environment. This structure provides combined assurance to the NRF Board.

13.12.1 NRF Corporate Executive Committee

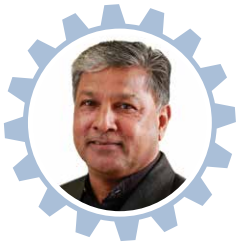
The Board of the NRF delegates to the CEO, which performs the function of the Accounting Officer of the NRF in line with the NRF Act. The CEO is also the Chairman of the Corporate Executive Committee. This committee is the formal internal NRF decision-making structure and is constituted as shown in **Figure 23**. The Corporate Secretary provides the secretariat function to the Corporate Executive Committee meetings. To ensure the cascading of key business and strategic information and engagement with all business units, the NRF has created a consultative forum, the NRF Directors' Forum, which meets twice a year.

13.12.2 Corporate Secretary

The Corporate Secretary function is mandatory in terms of the NRF Act. The Corporate Secretary provides a central source of guidance and advice to the Board in terms of governance principles and legislative compliance, and in this way supports the Board and its subcommittees. The Corporate Secretary of the NRF is also the formal point of contact between the organisation, its Board, the DST and the various parliamentary committees.

Figure 23: Corporate Executive Management

Dr Molapo Qhobela
Chief Executive Officer (From 1 January 2016)



Dr Gansen Pillay
Deputy CEO
Research and Innovation Support and Advancement

Prof. Nithaya Chetty
Deputy CEO
Astronomy

Mr Patrick Thompson
Group Executive
Human Resources and Legal Services

Mr Bishen Singh
Group Executive
Finance and Business Systems

Dr Beverley Damonse
Group Executive
Science Engagement and Corporate Relations
(Acting CEO February to December 2015)

13.12.3 Risk management

The NRF adopts a balanced approach to Enterprise Risk Management (ERM) in pursuit of its strategic goals while safeguarding the direct interests of the organisation's stakeholders. The NRF's Enterprise Risk Management Charter and Suite of Policies provide a common 'risk language', describes the roles and responsibilities of key players in managing enterprise risk, and measures the risk appetite of management. The implementation of the ERM Charter contributes to:

- Proactively identifying, managing and monitoring enterprise risks so as to minimise losses and disruption to the NRF;
- Promoting and embedding a risk-conscious culture and behaviour throughout the NRF;
- Complying with relevant legal and regulatory requirements; and
- Integrating risk into the internal audit methodology such that internal audit becomes risk based.

The NRF Risk Management Committee reviews and provides advice on treatment of organisational risks. Risk management is a standing item on the agenda of the Corporate Executive Committee and the Audit and Risk Committee of the NRF Board. During the financial year, the Corporate Executive Committee reviewed the operational and strategic risk registers of the organisation. Operational risks are managed on an ongoing basis.

13.12.4 Internal control

The NRF has established a centralised internal control development unit in support of the organisational philosophy to integrate control across the organisation through a set of policies and procedures. These internal controls are developed, reviewed and implemented during, inter alia, risk management, policy development, system design, corporate governance, audits, standard operating procedures, and legislative compliance and sustainability initiatives.

13.12.5 Internal audit

The internal audit function derives its mandate from the Audit and Risk Committee terms of reference, whereby the Audit and Risk Committee is pivotal in ensuring that the internal audit function is independent and has the necessary standing and authority to discharge its functions. For a summary of meetings of the Audit and Risk Committee, refer to **Table 22**.

As crucial assurance providers, both internal and external audits are encouraged to cooperate and ensure that there is an optimal level of overlap between them. The Audit and Risk Committee tasks the in-house internal audit function with compiling a three-year rolling annual audit plan that is approved on an annual basis to:

- Test the key internal controls across the business;
- Audit specific areas based on the outcome of a risk assessment;
- Provide advisory services to the organisation as necessary; and
- Provide *ad hoc* audit and investigative services as necessary.

The NRF Internal Audit Unit has adopted a co-sourced model, whereby the organisation makes use of an internal audit service provider as well as in-house resources to meet the mandate and responsibilities of the unit. The purpose, authority and responsibility of the Internal Audit Unit of the NRF are defined in a Board-approved charter that is consistent with the Institute of Internal Auditors definition of internal auditing, the Treasury Framework on Internal Audit and the principles of King III. The primary scope in providing assurance includes:

- Evaluating the reliability and integrity of information and the means used to identify, measure, classify and report such information;
- Evaluating the systems established to ensure compliance with policies and procedures, plans and legislation that could be significant to the organisation;
- Evaluating the means of safeguarding assets and, as appropriate, verifying the existence of such assets;
- Evaluating the effectiveness and efficiency with which resources are employed;
- Evaluating operations or projects to ensure that results are consistent with established objectives, and whether the operations are being carried out as planned;
- Monitoring and evaluating governance processes; and
- Monitoring and evaluating the risk management process.

The assurance mandate is informed by the results of the risk-based Audit Coverage Plan, which is approved annually by the Audit and Risk Committee and informed by the combined assurance matrix. The plan aims to monitor the internal controls, governance and risk management at operational levels of the organisation.

Table 27 shows all the reviews performed by the Internal Audit Unit during the 2015/16 financial year.

Table 27: Internal Audit reviews for the year ending 31 March 2016

Nr	Business unit/ Facility	Area	Type of review	Responsibility (In-house/Outsourced)	Quarter
1	University of Zululand	Grant Management (Expenditure)	Assurance	In-house	Q1
2	Walter Sisulu University	Grant Management (Expenditure)	Assurance	In-house	Q1
3	RISA Programmes	Grant Management	Assurance	In-house	Q2
4	North-West University	Grant Management (Expenditure)	Assurance	In-house	Q2
5	RISA	Human Resources Management, including Payroll	Assurance	In-house	Q2
6	RISA	Procurement and SCM	Assurance	Outsourced	Q2
7	SKA	Human Resources Management, including Payroll (Cape Town)	Assurance	In-house	Q3
8	SKA	Procurement and SCM (Cape Town)	Assurance	Outsourced	Q3
9	SKA	Financial Management (Cape Town)	Assurance	In-house	Q3
10	SKA	Grant Management (Johannesburg)	Assurance	In-house	Q3
11	NZG	Financial Management	Assurance	In-house	Q3
12	NZG	Procurement and SCM	Assurance	Outsourced	Q3
13	iThemba LABS	Utilisation of Infrastructure (Performance Audit)	Advisory	Outsourced	Q4
14	iThemba LABS	Financial Management	Assurance	In-house	Q4
15	iThemba LABS	IT General Controls (follow-up)	Assurance	In-house	Q4
16	Corporate Governance	Audit of Performance Objectives	Assurance	Outsourced	Q4

13.12.6 Compliance with laws and regulations

The organisation uses a Priority Compliance Listing that identifies applicable pieces of priority legislation, regulations and codes of best practice. This list is continuously monitored and updated. King III urges the organisation's leadership not only to drive compliance with laws, but also to focus on non-binding rules, codes and standards. **Table 28** and **Table 29** contain some key (but not exhaustive) laws and best practice codes applicable to the NRF's operations and mandate.

Table 28: Priority compliance listing of applicable legislation and best practice

	Legislation	RISA	NZG	SAEON	SAASTA	SAIAB	HartRAO	SAAO	iThemba LABS	SKA
1	National Research Foundation Act 23 of 1998	✪	✪	✪	✪	✪	✪	✪	✪	✪
2	Occupational Health and Safety Act 85 of 1993	✪	✪	✪	✪	✪	✪	✪	✪	✪
3	National Water Act 36 of 1998	✪	✪	✪	✪	✪	✪	✪	✪	✪
4	NEMA – National Environmental Management Act 107 of 1998	✪	✪	✪	✪	✪	✪	✪	✪	✪
5	Public Finance Management (PFMA) Act 1 of 1999	✪	✪	✪	✪	✪	✪	✪	✪	✪
6	New Companies Act 71 of 2008	✪	✪	✪	✪	✪	✪	✪	✪	✪
7	Intellectual Property Rights from Publicly Financed Research and Development Act 51 of 2008	✪	✪	✪	✪	✪	✪	✪	✪	✪
8	Skills Development Act 97 of 1998	✪	✪	✪	✪	✪	✪	✪	✪	✪
9	Employment Equity Act 55 of 1998	✪	✪	✪	✪	✪	✪	✪	✪	✪
10	Labour Relations Act 66 of 1995	✪	✪	✪	✪	✪	✪	✪	✪	✪
11	Basic Conditions of Employment Act 75 of 1997	✪	✪	✪	✪	✪	✪	✪	✪	✪
12	National Environmental Management: Biodiversity Act 10 of 2004		✪	✪		✪				
13	National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Threatened or Protected Species Regulations		✪	✪		✪				
14	Astronomy Geographic Advantage Act 21 of 2007						✪	✪		✪
15	Mine Health and Safety Act 29 of 1996									✪
16	Mineral and Petroleum Resources Development Act 28 of 2002									✪
17	Marine Living Resources Act 18 of 1998					✪				
18	National Environmental Management: Air Quality Act (NEM:AQA), 39 of 2004								✪	
19	National Environmental Management: Waste Act 59 of 2008		✪			✪			✪	✪
20	Promotion of Access to Information Act 2 of 2000	✪	✪	✪	✪	✪	✪	✪	✪	✪
21	Occupational Health and Safety Act 85 of 1993: Diving Regulations					✪				
22	Occupational Health and Safety Act 85 of 1993: Construction Regulations									✪
23	National Radioactive Waste Disposal Institute Act 53 of 2008								✪	
24	National Health Act 61 of 2003								✪	
25	South African National Space Agency Bill (B20 of 2008)						✪	✪		✪
26	Animal Health Act 7 of 2002		✪							
27	Compensation for Occupational Injuries and Diseases Act 130 of 1993									
28	Animal Protection Act 71 of 1962		✪	✪						

Table 29: Applicable sustainability best practice codes and standards

	Best practice codes and standards	RISA	NZG	SAEON	SAASTA	SAIAB	HartRAO	SAAO	iThemba LABS	SKA
1	King III Code of Corporate Governance for SA	✪	✪	✪	✪	✪	✪	✪	✪	✪
2	International Financial Reporting Standards (IFRS) for Financial Reporting	✪	✪	✪	✪	✪	✪	✪	✪	✪
3	PAAZAB Code of Ethics		✪							
4	African Preservation Programme (APP) Resource Manual		✪							
5	SANS 103862008: South African National Standard for the care and use of animals for scientific purposes		✪							
6	World Association of Zoos and Aquariums (WAZA): WAZA Code of Ethics and Animal Welfare		✪							
7	Occupational Health and Safety Management Systems 18001 2007		✪							
8	ISO 14001 2004 Environmental Management System		✪	✪		✪			✪	✪
9	ISO 9001 2008 Quality Management System	✪	✪		✪	✪			✪	✪
10	Current Good Manufacturing Practices (cGMP)								✪	
11	International Atomic Energy Agency (IAEA) standards								✪	

13.12.7 Supply chain management (SCM)

In accordance with the statutory regulations stipulated under regulation 16A of the PFMA (No. 1 of 1999 as amended by No. 29 of 1999) on supply chain management, the NRF has implemented an effective and efficient supply chain management system to acquire goods and services, and to dispose of and let state assets (including the disposal of goods).

The corporate SCM role is to ensure that SCM processes adhere to international best practices, legislation and internal control in the areas of demand management, logistics management, disposal management, SCM risk management, and assessment of SCM performance. This is achieved by designing and implementing appropriate processes, including workflow, and providing support in the form of training, policies, systems, templates, advisories, advice, directives, forums, quality assurance for tenders, as well as contributing to the bid adjudication processes. The SCM unit also ensures the use of transversal agreements and negotiates bulk rates where feasible. The NRF Board has approved the formal terms of reference for the Bid Adjudication Committee. The committee members have been appointed for a three-year term, and the committee is functioning well.

13.12.8 Fraud and corruption

The NRF has an all-encompassing policy entitled 'The Prevention, Detection and Resolution of Fraud and Corruption', which includes a Fraud Prevention Plan. The policy was reviewed during the reporting period. The organisation subscribes to the National Anti-Corruption Hotline (NACH), which ensures that all allegations of fraud and corruption cases are appropriately investigated in line with policy and NACH turnaround times. Depending on the outcome of the investigation and based on the recommendations of the oversight committee, issues raised are reported to the NRF Board for consideration in terms of the NRF Act.

13.12.9 Minimising conflict of interest

A conflict of interest occurs when an individual or an organisation is involved in multiple interests, and where there is potential to possibly corrupt the motivation to act in one or another's interests. While it is understood that conflict of interest can be voluntarily identified and defused before corruption occurs, the NRF, given its strategic role in the national landscape, minimises the risk of such conflicts by ensuring that the proper segregation of duties exists at all levels of the organisation. In the area of grant management, the business adopts the process of independent external review and evaluation as opposed to taking those decisions internally.

All the organisation's processes and operating procedures are open to audit, evaluation and review, and the NRF engages in an organisation-wide review once every five years as set out in the 1996 White Paper on Science and Technology. Specific programmes and units are also subject to external review as deemed necessary, or as part of the governance of the programme or unit.

All staff are required to disclose conflicts of interest in line with the goverment framework on financial disclosures. The organisation takes the non-disclosure of interest very seriously, and punitive action is set out as part of the NRF disciplinary code if any members of staff breach the policy with regard to disclosure.

13.12.10 Code of conduct

The NRF adopted a Code of Ethics, Values and Business Conduct ('the Code') as part of its suite of Consolidated Human Resources Policies and Procedures. The Code is complementary to the conditions of service of the NRF and is a statement of the values that the NRF pursues in its dealings with people and organisations, internally and externally. The spirit of the Code is to support ethical conduct by all individuals covered by it. To help employees comply with both the letter and spirit of the Code, the NRF has developed a set of guidelines that are published with the Code. A breach of the Code attracts censure and is dealt with in terms of the NRF's disciplinary code.

13.12.11 Health, safety and environmental issues

The Occupational Health and Safety (OHS) Act prescribes the compliance requirements for particular environments. Given the diverse nature of the NRF and the various health and safety requirements, specific interventions may be required to meet the needs. The Risk Unit ensures that specific needs are met by customising compliance solutions across the NRF.

13.12.12 Ethical and social responsibility

The NRF as an organisation has conducted, and will continue to conduct, business in a manner that meets existing needs without compromising the possibilities for future generations. The NRF takes cognisance of the impact that the business has on its stakeholder community. To this end, the NRF Board enhanced the Board's terms of reference to include the implementation of legal requirements and prevailing codes of best practice and standards with regard to social and ethical matters. These include the following:

Good corporate citizenship through:

- The promotion of equality, prevention of unfair discrimination, and reduction of corruption;
- The contribution to the development of communities in which its activities are predominantly conducted or within which its products or services are predominantly delivered;
- The environment, sustainability and public health and safety including the impact of all activities, products and services of the entity in terms of the Global Reporting Initiative (GRI); and
- The establishment and maintenance of proper stakeholder relations.

Labour and employment, including the:

- International Labour Organisation Protocol;
- Employment Equity Act (No. 55 of 1998); and
- Broad-Based Black Economic Empowerment Act (No. 53 of 2003).

Social and economic development, including the entity's standing in terms of:

- The 10 principles set out in the United Nations Global Compact; and
- The OECD recommendations regarding corruption.

The social and ethical agenda is addressed at various levels of the organisation.

13.12.13 Corporate social investment

Adopt-a-School has been identified as the flagship corporate social responsibility (CSR) initiative, and presents an opportunity to implement all the current activities under a broader umbrella initiative for a period of three to five years. This will enable the NRF to measure and report on impact over time. The initiative is underpinned by the *Whole School Development* approach, rather than quick fixes. This approach focuses on long-term solutions such as science laboratories, libraries, computer laboratories and other education infrastructure, as well as teacher and learner intervention for all the aspects of schooling.

The following CSR activities took place during the reporting period:

Take a Girl Child to Work and Men in the Making

The unit participated in two campaigns to introduce children to the working environment, and inspire them to further their education – Take a Girl Child to Work and Men in the Making. Subsequently, an informal agreement was developed with NECSA to assist with Mathematics and Science tutoring on Saturdays at the Letlotlo and Hlanganani high schools, from where the boys hail.

Mandela Day

The unit coordinated the participation of NRF employees in Mandela Day contributions and activities.

Programme 4: Corporate social investment activities

- Fourteen automatic weather stations and computers were installed at schools affiliated to the SAEON education outreach programme. Teachers and learners are now able to use weather data in the classroom and to design science projects.
- As part of its community service commitments, the NZG provides free entrance to pensioners and underprivileged groups. During the year under review, 3 179 pensioners (value R270K) and 10 350 underprivileged visitors (value R759K) were hosted by the facility.
- SAIAB assists the Good Shepherd Primary School in running the school library on an ongoing basis.
- SAIAB also assists with the regular reading and recording of Sotho books for the South African Library for the Blind.

Programme 5: Corporate social investment activities

- SKA SA has established e-Schools systems in five schools in the SKA SA community. All the relevant hardware has been installed, and teacher training started at the beginning of April 2015. The DST has committed funds for a pilot programme for the second phase of the e-Schools Programme, to provide tablets to Carnarvon High School, and towards training on how to integrate tablets into daily teaching.
- SKA SA installed a fibre-optic connection to Carnarvon High School, while the Department of Rural Development and Land Reform has provided V-SAT connection to Williston Combined School and has committed to providing the same connection to Carnarvon Primary School.
- Two science and mathematics teachers were appointed at Carnarvon High School for the period 2015–2017. These posts are funded by SKA SA.

14 HUMAN RESOURCES

14.1 Introduction

The Corporate Human Resources and Legal Services (HRLS) function responds to the needs expressed in the strategic and annual performance plans of NRF divisions and business units for 2015/16 by contributing to a qualified staff complement through a number of processes, tools and interventions in the HR value chain:

- Ensuring transparent, fair and equitable recruitment processes to attract staff who are qualified, motivated and competent to excel in their appointed positions;
- Inculcating commitment to organisational goals, fostering a positive client-centric organisational culture and building competencies on an ongoing basis among staff and management in line with the strategic goals and needs of the NRF;
- Ensuring that key competencies are maintained; managing the risks and planning for long-term succession in strategic and key management and leadership positions;
- Building relationships and maintaining harmony among staff, management and stakeholder labour organisations; and
- Striving continuously to improve the execution and effective management of a set of basic processes and tools to ensure current and future success.

14.2 Staff recruitment, turnover and succession planning

A total of 191 staff members joined the organisation in the 2015/16 financial year, 66 of whom are linked to the SKA SA environment.

As part of the process of ensuring the sustainability of the organisation, the NRF reviews its succession plans at senior and top management levels on an annual basis. This review is undertaken and discussed with the Remuneration and HR Committee of the NRF Board and approved by the Board.

Table 30 provides an analysis of the recruitment activity and the turnover movements by reason, race and gender for the period under review.

Table 30: Staff movement by reason, race and gender as at 31 March 2016

	Reason	Designated							Non-Designated			Total
		Male			Female				Male	Foreign nationals		
		African	Coloured	Indian	African	Coloured	Indian	White	White	Male	Female	
Turnover movement	Absconded											–
	Contracts expiring	6	3	–	10	2	–	3	6	2	–	32
	Death	–	–	–	–	–	–	2	–	1		3
	Dismissals	–	–	–	–	–	–	–	–	–	–	–
	Ill-health/Disability	–	–	–	–	–	–	–	–	–	–	–
	Resignations	26	6	–	25	9	1	12	18	1	2	100
	Retirements	1	1	–	3	–	–	2	1	–	–	8
	Retrenchment	–	–	–	–	–	–	–	–	–	–	–
	Transfers	1	–	–	1	–	1	–	–	2	–	5
	Grand Total	**34**	**10**	**–**	**39**	**11**	**2**	**19**	**25**	**6**	**2**	**148**

Table 30a: New engagements (excluding SKA)

NRF excluding SKA										
Male				Total	Female				Total	Grand Total
African	Coloured	Indian	White		African	Coloured	Indian	White		
34	8	2	12	56	49	5	3	12	69	125

Table 30b: New engagements (SKA)

SKA										
Male				Total	Female				Total	Grand Total
African	Coloured	Indian	White		African	Coloured	Indian	White		
17	20	–	11	48	10	4	–	4	18	66

Table 31: Staff turnover as at 31 March 2016

Staff turnover	2015/16
Staff total	1 404
Terminations	148
New appointments	191
Turnover	**10.54%**

14.3 Set HR priorities for the year under review and the impact of these priorities

14.3.1 Improve staff and succession planning

The NRF reviewed its staffing and succession plans in key positions. This systematic process ensures that:

- Risks to the organisation are managed;
- Resources are optimally used; and
- Sustainability of the organisation is assured.

Areas of improvement were identified and actions to be taken fed into the short- to medium-term implementation plans.

14.3.2 Improve the competency levels of staff through training and development

The diversity management programme (phase 2: staff workshops) was finalised in 2015/16. The programme is a crucial intervention towards optimal staff harmony and understanding. Compliance with the workplace skills plan (WSP) process was introduced across the organisation. Implementation and operationalisation of this practice will be part of the overall organisational business planning process in the new financial year.

The RISA competency development project commenced in the period under review to identify the skills, knowledge and behaviours essential to perform successfully. The project provides a shared language for concrete discussions, and a shared view of the standards RISA is striving to achieve. The process will assist in the alignment of the organisation's human capacity needs, its strategic business objectives and the budget. An equity and skills development committee was set up and training provided for committees and the national structure.

The training interventions reached a total of 1 404 candidates across various NRF business units, namely RISA, SAASTA, NZG, HartRAO, SAAO, iThemba LABS and Corporate Services.

The customised one-year Management and New Management Development Programme (MDP and NMDP), designed together with the University of Stellenbosch Business School Executive Development (USB-ED), concluded its final year of roll-out with the last 30 candidates having graduated earlier in the year. A total of 90 NRF employees successfully completed the programme over the last three years.

14.4 Human Resource oversight statistics

Table 32: Personnel cost by salary band as at 31 March 2016

Personnel cost by salary band	Occupational level	Personnel expenditure R'000	Personnel expenditure as a % of total expenditure R'000	No. of employees	Average personnel cost per employee R'000
	Top management	8 977	2%	5	1 795
	Senior management	30 229	6%	22	1 374
	Professionally qualified and experienced specialists and mid-management	205 372	38%	317	648
	Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents	254 938	47%	731	349
	Semi-skilled and discretionary decision-making	27 762	5%	199	140
	Unskilled and defined decision-making	10 077	2%	115	96
	Total	**537 355**	**100%**	**1 389**	**4 402**

Table 33: Performance rewards as at 31 March 2016

Performance rewards	Occupational level	Performance rewards R'000	Personnel expenditure R'000	No. of employees	% of performance rewards to total personnel cost
	Top management	480	12 329	3	8%
	Senior management	703	32 046	7	12%
	Professionally qualified and experienced specialists and mid-management	3 063	231 225	68	51%
	Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents	1 686	280 184	118	28%
	Semi-skilled and discretionary decision-making	84	31 090	16	1%
	Unskilled and defined decision-making	–	10 478	2	–
	Total	**6 016**	**597 351**	**214**	**100%**

Table 34: Employment changes as at 31 March 2016

Reasons for leaving	Reason	No. of employees	% of total no. of staff leaving
	Absconded	0	–
	Deceased	3	2.03%
	Dismissal	0	0.00%
	Expiry of contract	32	21.62%
	Resignation	100	67.57%
	Retirement	8	5.41%
	Retrenchment	0	–
	Transfers	5	3.38%
	Total	**148**	**100.00%**

Table 35: Male equity target and employment equity status

Equity target and employment equity status	Occupational level	Male							
		African		Coloured		Indian		White	
		Current	Target 2020	Current	Target 2020	Current	Target 2020	Current	Target 2020
	Top management	2	2	–	–	3	1	–	–
	Senior management	5	10	2	1	1	1	9	6
	Professionally qualified and experienced specialists and mid-management	46	67	25	22	8	4	122	78
	Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents	173	232	84	103	3	11	88	89
	Semi-skilled and discretionary decision-making	102	72	23	17	–	2	2	14
	Unskilled and defined decision-making	21	18	12	21	–	–	2	3
	Total permanent	**349**	**401**	**146**	**164**	**15**	**19**	**223**	**190**
	Non-permanent employees	10	17	8	7	1	–	4	9
	Total	**359**	**418**	**154**	**171**	**16**	**19**	**227**	**199**

Table 36: Female equity target and employment equity status

Equity target and employment equity status	Occupational level	Female							
		African		Coloured		Indian		White	
		Current	Target 2020	Current	Target 2020	Current	Target 2020	Current	Target 2020
	Top management	–	2	1	1	–	–	–	–
	Senior management	2	5	–	2	2	–	–	1
	Professionally qualified and experienced specialists and mid-management	19	60	6	22	6	6	43	30
	Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents	213	220	61	89	11	11	74	62
	Semi-skilled and discretionary decision-making	64	72	13	13	1	4	3	14
	Unskilled and defined decision-making	18	21	20	28	–	1	1	2
	Total permanent	**316**	**380**	**101**	**155**	**20**	**22**	**121**	**109**
	Non-permanent employees	9	7	2	1	1	–	5	2
	Total	**325**	**387**	**103**	**156**	**21**	**22**	**126**	**111**

14.5 General

14.5.1 Remuneration

The NRF executive management and general staff are remunerated in accordance with the total-cost-to-company approach. To attract and retain high-calibre staff, the NRF positions its average salaries for good performers at the median of the general market. General salary adjustments in respect of prevailing economic conditions are negotiated with representative unions on an annual basis. Differentiation among individual salaries is based on job evaluation and individual performance as measured through the NRF Integrated Performance Management System, and rewarded through performance bonuses and notch salary movement for deserving individuals.

The Board conducts an annual performance assessment of the organisation and of the CEO. The Board's Remuneration and Human Resources Committee takes these results into consideration when recommending remuneration levels for executives and senior management. The Board also makes recommendations regarding the organisation's remuneration levels in general.

In line with principles of transparency, **Table 37** indicates the remuneration packages of the Corporate Executive Committee of the NRF.

Table 37: Remuneration packages of the Corporate Executive Management as at 31 March 2016

Corporate Executive Management	2011/12 R'000	2012/13 R'000	2013/14 R'000	2014/15 R'000	2015/16 R'000
AS Van Jaarsveld (resigned)	2 300	2 468	2 630	2 815	–
M Qhobela (appointed January 2016)	–	–	–	–	652
D Pillay	1 697	1 819	1 934	2 295	2 325
G Mazithulela (from February 2009)	422	–	–	–	–
B Singh	1 623	1 741	1 852	2 223	2 315
PB Thompson	1 623	1 741	1 852	2 169	2 315
BA Damonse	1 400	1 503	1 604	817	2 276
N Chetty	–	–	697	1 883	1 009
Total remuneration	**9 065**	**9 272**	**10 569**	**12 202**	**11 020**

14.5.2 Employment equity and organisational transformation

The Employment Equity Plan is at the core of the NRF's commitment to transformation and to implement employment equity and representivity in all occupational levels and categories of its workforce, as well as to give effect to the NRF Employment Equity and Redress Policy adopted by the Board. The organisation's Employment Equity Plan sets out the measures to be taken to ensure legal compliance with the Employment Equity Act (No. 55 of 1998). Furthermore, it includes the objectives, activities, numerical goals and targets for progressively moving towards achieving representivity of the designated groups across the organisational structure.

Table 38: The employment level of NRF staff in terms of race and gender as at 31 March 2016

	Occupational level	Designated							Non-designated			Total
		Male			Female				Male	Foreign nationals		
		A	C	I	A	C	I	W	W	Male	Female	
Employment equity	Top management	2	–	3	–	1	–	–	–	–	–	**6**
	Senior management	5	2	1	2	–	2	–	9	1	–	**22**
	Professionally qualified and experienced specialists and mid-management	46	25	8	19	6	6	43	122	39	14	**328**
	Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents	173	84	3	213	61	11	74	88	11	8	**726**
	Semi-skilled and discretionary decision-making	102	23	–	64	13	1	3	2	–	–	**208**
	Unskilled and defined decision-making	21	12	–	18	20	–	1	2	–	–	**74**
	Total Permanent	**349**	**146**	**15**	**316**	**101**	**20**	**121**	**223**	**51**	**22**	**1364**
	Non-permanent employees	10	8	1	9	2	1	5	4	–	–	**40**
	Grand Total	**359**	**154**	**16**	**325**	**103**	**21**	**126**	**227**	**51**	**22**	**1404**

Note: A=African, C=Coloured, I=Indian, W=White

14.5.3 Gender and race per level of employment

There has been a steady increase in the overall employment of women, especially at the level of professional and academically qualified staff. In driving the employment equality targets, the NRF anticipates that this trend will continue in the coming financial years.

Table 39: NRF staff gender representation by level of employment (2011/12–2015/16)

NRF	Top and senior management		Professional and academically qualified		Semi-skilled		Unskilled		Non-permanent		Total		Total staff without foreign nationals
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
2011/12	20	5	451	363	134	69	33	35	33	33	671	505	**1 176**
2012/13	22	5	449	371	67	30	36	40	20	20	594	466	**1 060**
2013/14	23	6	504	394	115	71	32	35	46	22	720	528	**1 248**
2014/15	19	7	519	411	118	77	31	38	47	49	734	582	**1 316**
2015/16	22	5	549	433	127	81	35	39	23	17	756	575	**1 331**

While progress towards achieving the organisation's long-term employment equity targets continues at a steady pace, the overall representation of black staff stands at 73% against a target of 76%. Female representation met the target at 43%. People with disabilities account for 0.75% of staff against an annualised target of 1.16%. Key challenges remain gender representation at executive and senior management levels and that of blacks in the three highest employment categories.

In analysing the performance, it must be noted that the SKA SA project is a key contributor to the NRF staff complement. SKA SA employs staff in the high-end technical skills categories, and in some areas these skills are not readily available locally or among the designated groups. For this reason, SKA SA is allowed to fill its technical requirements with the proviso that skills transfer programmes are created to ensure that high-end human capacity development is facilitated.

14.5.4 Race per level of employment

Table 40: NRF staff representation in terms of designated and non-designated groups by level of employment (2011/12–2015/16)

NRF	Top and senior management		Professional and academically qualified		Semi-skilled		Unskilled		Non-permanent		Total		Total staff without foreign
	Designated	N-Designated	Designated	N-Designated	Designated	N-Designated	Designated	N-Designated	Designated	N-Designated	Designated	N-Designated	
2011/12	16	9	628	186	198	5	67	1	55	11	964	212	**1 176**
2012/13	17	10	643	177	180	4	65	1	51	9	956	201	**1 157**
2013/14	23	6	504	394	115	71	32	35	46	22	720	528	**1 248**
2014/15	19	7	519	411	118	77	31	38	47	49	734	582	**1 316**
2015/16	18	9	772	210	206	2	72	2	36	4	1104	227	**1 331**

There has been a steady increase in the employment of designated groups, especially at the level of professional and academically qualified staff.

14.5.5 Staff profile by age

Table 41: Staff profile in terms of age (2011/12–2015/16)

Age group	2011/12		2012/13		2013/14		2014/15		2015/16	
	No. of staff	% of staff	No. of staff	% of staff	No. of staff	% of staff	No. of staff	% of staff	No. of staff	% of staff
20–29	141	11.48%	136	11.00%	134	10.30%	174	12.67%	182	12.96%
30–39	461	37.54%	462	37.38%	484	37.20%	491	35.85%	500	35.61%
40–49	312	25.41%	320	25.89%	354	27.21%	398	28.94%	403	28.70%
50–59	244	19.87%	252	20.39%	249	19.14%	235	17.13%	235	16.74%
60–78	70	5.70%	66	5.34%	80	6.15%	91	5.40%	84	5.98%
Total	**1 228**	**100.00%**	**1 236**	**100.00%**	**1 301**	**100.00%**	**1 389**	**100.00%**	**1 404**	**100.00%**

Overall, the NRF is a relatively young organisation, with 77.27% of its staff younger than 50 years of age. It should be noted that the normal retirement age was increased from 60 to 65 years of age with effect from 1 January 2008 to protect the organisation from a premature exit of staff with scarce skills and experience. The distribution of staff age gravitates towards the age group between 30 and 49.

14.5.6 Staff qualifications

Research staff

The competitiveness of any organisation is largely determined by the profile and availability of suitably qualified staff. The number of researchers to total staff gives an indication of staff competencies and effectiveness, particularly in science councils. It should be noted, however, that the work at RISA and SAASTA is not research-intensive and therefore requires skills sets that are different from those needed by research-performing science councils or National Research Facilities within the NRF. At the National Research Facilities, 12% (147 of the total of 1 085 staff members) are employed in research-performing positions. The percentages range from 5% to 31% across all NRF facilities. **Table 42** provides information on the proportion of research staff to total staff per business unit.

Table 42: Proportion of research staff to total staff per business unit (2011/12–2015/16)

Business unit	Financial year	No. of researchers	Total staff	% researchers to total staff
RISA	2011/12	0	251	0%
	2012/13	0	250	0%
	2013/14	0	248	0%
	2014/15	0	246	0%
	2015/16	0	265	0%
SAASTA	2011/12	0	46	0%
	2012/13	0	50	0%
	2013/14	0	50	0%
	2014/15	0	54	0%
	2015/16	0	54	0%
SAAO	2011/12	24	125	19%
	2012/13	24	133	18%
	2013/14	24	133	18%
	2014/15	27	130	21%
	2015/16	24	109	22%
HartRAO	2011/12	9	44	20%
	2012/13	7	46	15%
	2013/14	8	46	17%
	2014/15	4	45	9%
	2015/16	7	44	16%
SAIAB	2011/12	9	44	20%
	2012/13	10	43	23%
	2013/14	12	43	28%
	2014/15	13	48	27%
	2015/16	12	45	27%
SAEON	2011/12	7	41	17%
	2012/13	12	54	22%
	2013/14	15	54	28%
	2014/15	18	68	26%
	2015/16	22	72	31%

Business unit	Financial year	No. of researchers	Total staff	% researchers to total staff
iThemba LABS	2011/12	47	282	17%
	2012/13	60	285	21%
	2013/14	59	285	21%
	2014/15	43	284	15%
	2015/16	50	281	18%
NZG	2011/12	4	302	1%
	2012/13	9	282	3%
	2013/14	16	282	6%
	2014/15	16	312	5%
	2015/16	19	289	7%
SKA SA	2011/12	8	113	7%
	2012/13	14	160	9%
	2012/14	15	160	9%
	2014/15	15	202	7%
	2015/16	13	245	5%
National Research Facilities – Total	2011/12	108	951	12%
	2012/13	136	1 003	14%
	2012/14	149	1 003	15%
	2014/15	136	1 089	12%
	2015/16	147	1 085	12%
NRF Total	2011/12	108	1 248	10%
	2012/13	136	1 303	11%
	2013/14	149	1 301	13%
	2014/15	136	1 389	11%
	2015/16	147	1 404	12%

Staff qualifications

In the 2015/16 reporting period, the NRF employed 172 staff members with a doctoral qualification and 109 with a master's degree. Thirty-six staff members enrolled for PhD studies and 49 for a master's qualification during the period under review. **Table 43** reflects the historic trend.

Table 43: Staff profile in terms of qualifications (2011/12–2015/16)

Facilities	PhD		%	Enrolled PhD		%	Master's		%	Enrolled Master's		%
2011/12	112	1 248	8.97%	26	1 248	2.08%	80	1 248	6.41%	31	1 248	2.48%
2012/13	120	1 236	9.71%	5	1 236	0.40%	96	1 236	7.77%	16	1 236	1.29%
2013/14	125	1 301	9.61%	38	1 301	2.92%	90	1 301	6.92%	27	1 301	2.08%
2014/15	131	1 389	9.43%	41	1 389	2.95%	113	1 389	8.14%	27	1 389	1.94%
2015/16	147	1 404	10.47%	31	1 404	2.21%	81	1 404	5.77%	33	1 404	2.35%

RISA and SAASTA	PhD		%	Enrolled PhD		%	Master's		%	Enrolled Master's		%
2011/12	21	1 248	1.68%	12	1 248	0.96%	36	1 248	2.88%	25	1 248	2.00%
2012/13	23	1 236	1.86%	7	1 236	0.57%	40	1 236	3.24%	15	1 236	1.21%
2013/14	23	1 301	1.77%	4	1 301	0.31%	31	1 301	2.38%	6	1 301	0.46%
2014/15	20	1 389	1.44%	3	1 389	0.22%	28	1 389	2.02%	6	1 389	0.43%
2015/16	25	1 404	1.78%	5	1 404	0.36%	28	1 404	1.99%	16	1 404	1.14%

Table 44: Union representation by business unit

Union representation	Business unit	Nehawu	PSA	Samwu	Solidarity	Total union members	Qualifying staff	%
	HartRAO	27	0	0	0	27	40	67.50%
	iThemba LABS	103	77	0	0	180	270	66.67%
	NZG	199	1	8	16	224	279	80.29%
	RISA	131	6	0	0	137	247	55.47%
	SAAO	4	18	0	0	22	102	21.57%
	SAASTA	30	0	0	0	30	48	62.50%
	SAEON	1	0	0	0	1	69	1.45%
	SAIAB	0	12	0	0	12	40	30.00%
	SKA	4	0	0	0	4	241	1.66%
	Grand total	**499**	**114**	**8**	**16**	**637**	**1 336**	**47.68%**
	Percentage	**37.35%**	**8.53%**	**0.60%**	**1.20%**	**47.68%**		

Table 45: Training costs

Directorate/Business unit	Intervention	Training expenditure	No. of employees	Average cost per employee
iThemba LABS	Diversity management	R187 496	201	R932
NZG	Diversity management	R46 874	60	R781
SKA SA	Diversity management	R23 437	12	R1 953
Corporate HR	MDP and NMDP final presentations	–	30	–
RISA Managers	Roles and responsibilities: discipline, grievances and conflict in the workplace	R63 483	30	R1 983
RISA	Diversity management	R210 933	181	R1 165
Total		**R532 223**	**514**	**R1 035**

Table 46: Proportion of staff enrolled for PhD and master's degrees

Directorate/Business unit	Target 2015/16		Performance 4th quarter 2015/2016		Variance	
	Master's	PhD	Master's	PhD	Master's	PhD
RISA (including SAASTA)	3.00%	3.00%	4.70%	1.25%	0.70%	-1.75%
National Research Facilities	2.00%	2.00%	2.86%	2.95%	0.86%	0.95%

15 NRF ALIGNMENT TO MTSF PRIORITY OUTCOMES AND DST STRATEGIC ORIENTED GOALS

Table 47: NRF alignment with MTSF priority outcomes and DST strategic oriented goals

No	MTSF priority outcomes	Strategic outcomes	Responding NRF Programme	Initiatives	DST strategic orientated goals
1	Quality basic education	4	Programme 2	The NRF contributes to teacher and learner development through the science engagement programme by improving learner and educator performance in SET-based programmes.	Human capital development
2	A long and healthy life for all South Africans	1 2	Programmes 3, 4 and 5	Through focused initiatives such as SARChI and the Centres of Excellence, the NRF addresses the issues around health related to TB, HIV and other epidemics. Additional to these long-term investments is the support for Nursing post-doctoral development in collaboration with Irish Aid and SANTRUST.	Increased knowledge generation
3	All people in South Africa are and feel safe				
4	Decent employment through inclusive growth	3 5	Programme 1	The NRF adheres to fair and transparent procurement and employment practices, and subscribes to the BBBEE Act (No. 53 of 2003). Furthermore, the organisation supports the DST/NRF Internship Programme by training and, where possible, retaining interns in various fields. The Professional Development Programme supports PhD graduates' transition into positions within the business, while the Management Development Programme supports staff in becoming better managers within the NRF.	
5	A skilled and capable workforce to support an inclusive growth path	1 5	Programme 3 Programmes 1, 4 and 5	In order to ensure that the NRF continues to create and support a skilled and capable workforce, the organisation provides support for postgraduate studies, researcher development at HEIs (including the provision of targeted grants for this purpose) and staff internal to the NRF.	Increased knowledge generation
6	An efficient, competitive and responsive economic infrastructure network	1	Programme 3	The NRF makes an indirect contribution to the key target of increasing electricity generation through research in alternative and renewable energy solutions. Specific programmes include: • Energy Human Capacity Development and Knowledge Generation (EHCD&KG) Programme • Energy Research Programme (ERP)	Increased knowledge generation
7	Vibrant, equitable, sustainable rural communities contributing towards food	1	Programmes 3 and 4	The business contributes to the field of food security through research and innovation by: • Directing the research agenda of specific funding instruments including targeted research chairs and a CoE. • Looking at food security from a National Research Facility perspective, where SAEON and SAIAB specifically contribute to the health and sustainability of the land and the oceans.	Increased knowledge generation

No	MTSF priority outcomes	Strategic outcomes	Responding NRF Programme	Initiatives	DST strategic orientated goals
8	Sustainable human settlements and improved quality of household life	1	Programmes 3 and 4	The NRF is currently creating a community of practice around human settlements.	Increased knowledge generation
9	Responsive, accountable, effective and efficient local government				
10	Protect and enhance our environmental assets and natural resources	1 2	Programmes 3 and 4	Through the adoption of the Ten-Year Innovation Plan and the R&D Strategy, the NRF contributes to the disciplines of climate change, biodiversity and environmental sustainability by providing national research platforms as well as research funding for: • Strategy for the Palaeosciences • Indigenous Knowledge Systems (IKS) • Global change • Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) • Multiwavelength Astronomy Project • Marine research on the southern oceans, other islands and Antarctica • Participation in the Belmont Forum	Responsive, coordinated and efficient NSI Increased knowledge generation
11	Create a better South Africa and contribute to a better Africa and a better world	3 1	Programme 1 Programmes 3 and 4	By fostering international research partnerships and scientific collaboration on the African continent and globally, the NRF plays an indirect role in creating a better South Africa and Africa. The NRF is currently party to 12 inter-agency agreements.	Responsive, coordinated and efficient NSI
12	An efficient, effective and development-oriented public service				
13	A comprehensive, responsive and sustainable social protection system				
14	A diverse, socially cohesive society with a common national identity	4 3	Programme 2 Programme 1	The NRF contributes indirectly through the effective generation, communication and dissemination of knowledge.	Human capital development

PART D:

ANNUAL FINANCIAL STATEMENTS

FOR THE YEAR ENDED 31 MARCH 2016

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The reports and statements set out below comprise the annual financial statements presented to the parliament:

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16 BOARD'S RESPONSIBILITIES AND APPROVAL

The Board is required by the Public Finance Management Act (Act 1 of 1999) to maintain adequate accounting records and is responsible for the content and integrity of the annual financial statements and related financial information included in this report. It is the responsibility of the Board to ensure that the annual financial statements fairly present the state of affairs of the NRF as at the end of the financial year and the results of its operations and cash flows for the period then ended. The external auditors are engaged to express an independent opinion on the annual financial statements and were given unrestricted access to all financial records and related data.

The annual financial statements have been prepared in accordance with Standards of Generally Recognised Accounting Practice (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

The annual financial statements are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates.

The Board acknowledges that they are ultimately responsible for the system of internal financial control established by the NRF and places considerable importance on maintaining a strong control environment. To enable the Board to meet these responsibilities, the Board sets standards for internal control aimed at reducing the risk of error or deficit in a cost-effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the NRF and all employees are required to maintain the highest ethical standards in ensuring the NRF's business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the NRF is on identifying, assessing, managing and monitoring all known forms of risk across the organisation. While operating risk cannot be fully eliminated, the NRF endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

The Board is of the opinion, based on the information and explanations given by management,that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the annual financial statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or deficit.

The Board has reviewed the NRF's cash flow forecast for the year to 31 March 2017 and, in the light of this review and the current financial position, they are satisfied that the NRF has, or has access to, adequate resources to continue in operational existence for the foreseeable future.

Although the Board is primarily responsible for the financial affairs of the NRF, they are supported by the NRF's external auditors.

The external auditors are responsible for independently reviewing and reporting on the NRF's annual financial statements. The annual financial statements have been examined by the entity's external auditors and their report is presented on page 126.

The annual financial statements set out on pages 128 to 185, which have been prepared on the going-concern basis, were approved by the Board on 27 July 2016 and were signed on its behalf by:

Dr Molapo Qhobela
Chief Executive Officer
July 2016

Prof. Loyiso Nongxa
NRF Board Chairman
July 2016

17 AUDIT AND RISK COMMITTEE REPORT

We are pleased to present our report for the financial year ended 31 March 2016.

Audit and Risk Committee responsibility

The Audit and Risk Committee reports that it has complied with its responsibilities arising from section 51.1(a)(ii) of the PFMA and Treasury Regulations 3.1.13 and 27.1.

The Audit and Risk Committee also reports that it has adopted appropriate formal terms of reference as its Audit and Risk Committee charter, has regulated its affairs in compliance with this charter and has discharged all its responsibilities as contained therein.

The effectiveness of internal control

The system of internal control applied by the NRF over financial and risk management is effective, efficient and transparent. In line with the PFMA and the King III Report on Corporate Governance requirements, Internal Audit provides the audit committee and management with assurance that the internal controls are appropriate and effective. This is achieved by means of the risk management process, as well as the identification of corrective actions and suggested enhancements to the controls and processes. From the various reports of the Internal Auditors, the Audit Report on the annual financial statements, and the management report of the Auditor General South Africa, it was noted that no matters were reported that indicate any material deficiencies in the system of internal control or any deviations therefrom. Accordingly, we can report that the system of internal control over financial reporting for the period under review was efficient and effective.

Evaluation of annual financial statements

The Audit Committee has:

- reviewed and discussed the audited annual financial statements to be included in the annual report with the Auditor General and the Accounting Authority;
- reviewed the Auditor General of South Africa's management report and management's response thereto;
- reviewed changes in accounting policies and practices;
- reviewed the entity's compliance with legal and regulatory provisions; and
- reviewed significant adjustments resulting from the audit.

The Audit and Risk Committee concurs with, and accepts the Auditor General of South Africa's report on the annual financial statements, and is of the opinion that the audited annual financial statements should be accepted, and read together with the report of the Auditor General of South Africa.

Internal audit

The Audit and Risk Committee is satisfied that the internal audit function is operating effectively, and that it has addressed the risks pertinent to the entity and its audits.

Auditor General of South Africa

The Audit and Risk Committee has met with the Auditor General of South Africa to ensure that there are no unresolved issues.

Peter Clayton

Dr Peter Clayton
Audit and Risk Committee Chairman
July 2016

18 REPORT OF THE AUDITOR-GENERAL TO PARLIAMENT ON THE NATIONAL RESEARCH FOUNDATION

Introduction

1. I have audited the financial statements of the National Research Foundation (NRF) set out on pages 128 to 185, which comprise the statement of financial position as at 31 March 2016, the statements of financial performance, statements of changes in net assets, cash flow statement and the statement of comparison of budget and actual amounts for the year then ended, as well as the notes, comprising a summary of significant accounting policies and other explanatory information.

The accounting authority's responsibility for the financial statements

2. The accounting authority is responsible for the preparation of and fair presentation of these financial statements in accordance with the Standards of Generally Recognised Accounting Practice (GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA), and for such internal control as the accounting authority determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor-general's responsibility

3. My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with International Standards on Auditing. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.
4. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.
5. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

6. In my opinion the financial statements present fairly, in all material respects, the financial position of the National Research Foundation as at 31 March 2016, and its financial performance and cash flows for the year then ended in accordance with GRAP and the requirements of the PFMA.

Report on other legal and regulatory requirements

7. In accordance with the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA) and the general notice issued in terms thereof. I have a responsibility to report on findings on the reported performance information against predetermined objectives for selected programme presented in the annual performance report, compliance with legislation and internal control. The objective of my test was to identify reportable findings as described under each subheading, but not to gather evidence to express assurance on these matters. Accordingly, I do not express an opinion or conclusion on these matters.

Predetermined objectives

8. I performed procedures to obtain evidence about the usefulness and reliability of the reported performance information for the following selected programme

presented in the annual performance report of the entity for the year ended 31 March 2016:

- Programme 3: Research and innovation support and advancement on pages 61 to 74.

9. I evaluated the usefulness of the reported performance information to determine whether it was presented in accordance with the National Treasury's annual reporting principles and whether the reported performance was consistent with the planned programmes. I further performed tests to determine whether indicators and targets were well defined, verifiable, specific, measurable, time bound and relevant, as required by the National Treasury's *Framework for managing programme performance information* (FMPPI).
10. I assessed the reliability of the reported performance information to determine whether it was valid, accurate and complete.
11. I did not raise any material findings on the usefulness and reliability of the reported performance information for the following.
    - Programme 3: Research and innovation support advancement.

Additional matter

12. Although I raised no material findings on the usefulness and reliability of the reported performance information for the selected programme, I draw attention to the following matters:

Achievement of planned targets

13. Refer to the annual performance report on pages 186 to 191 for information on the achievement of planned targets for the year.

Adjustment of material misstatements

14. I identified material misstatements in the annual performance report submitted for auditing. The material misstatements were in the reported performance information for the number of users of equipment and publications emanating from the usage of equipment that was funded by the NEP and NNEP programme within the research and innovation support advancement programme.

Compliance with legislation

15. I performed procedures to obtain evidence that the entity had complied with applicable legislation regarding financial matters, financial management and other related matters. I did not identify any instances of material non-compliance with specific matters in key legislation, as set out in the general notice issued in terms of the PAA.

Internal control

16. I considered internal control relevant to my audit of the financial statements, performance information and compliance with legislation. I did not identify any significant deficiencies in internal control.

Other reports

Audit-related services and special audits

17. At the request of the entity, an agreed-upon procedures engagement is currently in progress on the grants received and the related expenditure for various contracts/programmes of the Research and Innovation Support Advancement facility within the NRF.
18. At the request of the entity, an audit is currently in progress in terms of International Standards on Auditing 805 (ISA 805) on the specific balances and transactions relating to the Technology and Human Resources for Industry Programme (THRIP), which is included in the NRF's financial statements. The amounts relating to THRIP are received as a transfer payment from the Department of Trade and Industry.

Investigations

19. The entity appointed an independent private firm to conduct a forensic investigation into allegations of fraud perpetrated by an external syndicate. The investigation is currently still in progress.

Auditor - General

Pretoria

29 July 2016

AUDITOR-GENERAL SOUTH AFRICA

Auditing to build public confidence

STATEMENT OF FINANCIAL POSITION

as at 31 March 2016

	Note(s)	2016 R'000	Restated 2015 R'000
Assets			
Current assets			
Inventories	11	6,180	5,816
Other financial assets	7	627,150	572,954
Receivables from exchange transactions	12	445,637	262,849
Grants paid in advance	10	392,677	424,631
Cash and cash equivalents	13	671,475	704,558
		2,143,119	**1,970,808**
Non-current assets			
Property, plant and equipment	3	1,640,458	1,289,018
Intangible assets	4	53,743	59,980
Heritage assets	5	15,479	15,480
Investments in associates	6	22,795	25,763
Employee benefit asset	8	1,459	459
Prepayments	9	34,916	63,192
		1,768,850	**1,453,892**
Total assets		**3,911,969**	**3,424,700**
Liabilities			
Current liabilities			
Finance lease obligation	16	173	492
Payables from exchange transactions	19	103,728	120,164
Provisions	17	18,095	8,373
Designated income received in advance	18	1,972,022	1,840,779
		2,094,018	**1,969,808**
Non-current liabilities			
Finance lease obligation	16	47	157
Total liabilities		**2,094,065**	**1,969,965**
Net assets		**1,817,904**	**1,454,735**
Reserves			
SALT fund	15	22,795	25,763
Capital fund	14	1,709,682	1,364,477
Infrastructure fund		81,317	61,958
Accumulated surplus		4,110	2,537
Total net assets		**1,817,904**	**1,454,735**

STATEMENT OF FINANCIAL PERFORMANCE

	Note(s)	2016 R'000	Restated 2015 R'000
Revenue			
Revenue from exchange transactions			
Sale of goods and services	20	72,137	71,699
Insurance claim received		19,359	-
Other income	21	13,440	11,872
Entrance fees		36,054	33,216
Interest received – investment	22	101,528	60,000
Total revenue from exchange transactions		**242,518**	**176,787**
Revenue from non-exchange transactions			
Parliamentary grant		878,399	851,286
Ring-fenced income	23	1,735,687	717,470
Designated income	24	1,305,988	1,352,120
Total revenue from non-exchange transactions		**3,920,074**	**2,920,876**
Total revenue		**4,162,592**	**3,097,663**
Expenditure			
Programme 1: Corporate		(74,810)	(67,249)
Programme 2: Science Engagement		(163,945)	(134,756)
Programme 3: Research and Innovation Support and Advancement		(2,645,156)	(1,877,163)
Programme 4:National Research Facilities Excluding Astronomy		(394,746)	(378,005)
Programme 5: National Research Facilities – Astronomy Including SKA SA		(513,327)	(367,024)
Total expenditure		**(3,791,984)**	**(2,824,197)**
Operating surplus	28	**370,608**	**273,466**
(Loss)/gain on disposal of assets and liabilities		(784)	(2,621)
Loss on foreign exchange		(3,547)	(1,872)
Actuarial losses	8	-	(41)
Share of surpluses or deficits from associates, accounted for using the equity method		(2,967)	(4,152)
Finance cost	26	(141)	(373)
		(7,439)	**(9,059)**
Surplus for the year before asset acquisitions*		**363,169**	**264,407**

* R 345m (2015: R 238m) of this figure has been applied to the net acquisition of assets (refer to Statement of Changes in Net Assets). The surplus also includes an insurance claim settlement of R 19m for capital equipment replacement, ordered for delivery in the next financial year.

STATEMENT OF CHANGES IN NET ASSETS

	SALT fund R'000	Capital fund R'000	Infrastructure fund R'000	Total reserves R'000	Accumulated surplus R'000	Total net assets R'000
Opening balance as previously reported	29,915	1,129,791	29,652	1,189,358	4,363	1,193,721
Adjustments						
Correction of errors	-	(3,393)	-	(3,393)	-	(3,393)
Balance at 01 April 2014 as restated*	**29,915**	**1,126,398**	**29,652**	**1,185,965**	**4,363**	**1,190,328**
Changes in net assets						
Surplus for the year	-	-	-	-	264,407	264,407
Transfer to infrastructure development fund	-	-	32,306	32,306	(32,306)	-
Transfer from SALT fund	(4,152)	-	-	(4,152)	4,152	-
Transfer to capital fund	-	238,079	-	238,079	(238,079)	-
Total changes	(4,152)	238,079	32,306	266,233	(1,826)	264,407
Balance at 01 April 2015	**25,763**	**1,364,477**	**61,958**	**1,452,198**	**2,537**	**1,454,735**
Changes in net assets						
Surplus for the year	-	-	-	-	363,169	363,169
Transfer from SALT fund	(2,968)	-	-	(2,968)	2,968	-
Transfer to capital fund	-	345,205	-	345,205	(345,205)	-
Transfer to Infrastructure fund	-	-	19,359	19,359	(19,359)	-
Total changes	(2,968)	345,205	19,359	361,596	1,573	363,169
Balance at 31 March 2016	**22,795**	**1,709,682**	**81,317**	**1,813,794**	**4,110**	**1,817,904**
Note(s)	15	14				

CASH FLOW STATEMENT

	Note(s)	2016 R'000	Restated 2015 R'000
Cash flows from operating activities			
Receipts			
Parliamentary grant		878,399	851,286
Ring-fenced funding received		1,891,520	1,427,444
Designated income		1,115,257	1,124,887
Interest income		101,528	60,000
Other receipts		124,342	417
		4,111,046	3,464,034
Payments			
Employee costs		(563,292)	(521,496)
Suppliers		(562,543)	(339,542)
Finance cost		(141)	(373)
Grants, bursaries and other research		(2,578,464)	(2,000,852)
		(3,704,440)	(2,862,263)
Net cash flows from operating activities	29	**406,606**	**601,771**
Cash flows from investing activities			
Purchase of property, plant and equipment	3	(438,918)	(312,489)
Proceeds from sale of property, plant and equipment	3	881	672
Purchase of other intangible assets	4	(1,129)	(8,742)
Net cash flows from investing activities		**(439,166)**	**(320,559)**
Cash flows from financing activities			
Finance lease payments		(523)	(689)
Net increase/(decrease) in cash and cash equivalents		**(33,083)**	**280,523**
Cash and cash equivalents at the beginning of the year		704,558	424,035
Cash and cash equivalents at the end of the year	13	**671,475**	**704,558**

STATEMENT OF COMPARISON OF BUDGET AND ACTUAL AMOUNTS

Budget on accrual basis

	Final budget R'000	Actual amounts on comparable basis R'000	Difference between final budget and actual R'000	Reference
Statement of financial performance				
Revenue				
Revenue from exchange transactions				
Sale of goods and services	**69,703**	72,137	**2,434**	
Insurance claim received	**-**	19,359	**19,359**	41
Other income	**16,987**	13,440	**(3,547)**	
Entrance fees	**39,692**	36,054	**(3,638)**	
Interest received – investment	**30,638**	101,528	**70,890**	41
Total revenue from exchange transactions	**157,020**	**242,518**	**85,498**	
Revenue from non-exchange transactions				
Ring-fenced income	**1,998,685**	1,735,687	**(262,998)**	41
Parliamentary grant	**885,899**	878,399	**(7,500)**	
Designated income	**1,150,458**	1,305,988	**155,530**	41
Total revenue from non-exchange transactions	**4,035,042**	**3,920,074**	**(114,968)**	
Total revenue	**4,192,062**	**4,162,592**	**(29,470)**	
Expenditure				
Employees related costs	**(666,440)**	(577,904)	**88,536**	41
Depreciation and amortisation	**(79,039)**	(90,854)	**(11,815)**	
Grants, bursaries and other research expenditure	**(2,384,200)**	(2,556,222)	**(172,022)**	41
Programme and operating expenses	**(563,676)**	(567,004)	**(3,328)**	
Total expenditure	**(3,693,355)**	**(3,791,984)**	**(98,629)**	
Loss on disposal of assets and liabilities	**(100)**	(784)	**(684)**	
Loss on foreign exchange	**(7)**	(3,547)	**(3,540)**	
Share of surpluses or deficits from associates or joint ventures accounted for using the equity method	**-**	(2,967)	**(2,967)**	
Finance cost	**(35)**	(141)	**(106)**	
	(142)	**(7,439)**	**(7,297)**	
Actual amount on comparable basis as presented in the budget and actual comparative statement	**498,565**	**363,169**	**(135,396)**	

ACCOUNTING POLICIES

1. Presentation of annual financial statements

The annual financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practice (GRAP), issued by the Accounting Standards Board in accordance with Section 89 of the Public Finance Management Act (Act 1 of 1999).

These annual financial statements have been prepared on an accrual basis of accounting and are in accordance with the historical cost convention as the basis of measurement, unless specified otherwise. They are presented in South African Rand.

In the absence of an issued and effective Standard of GRAP, accounting policies for material transactions, events or conditions were developed in accordance with paragraphs 8, 10 and 11 of GRAP 3 as read with Directive 5.

Assets, liabilities, revenues and expenses were not offset, except where offsetting is either required or permitted by a Standard of GRAP.

A summary of the significant accounting policies, which have been consistently applied in the preparation of these annual financial statements, is disclosed below.

These accounting policies are consistent with the previous period.

1.1 Presentation currency

These annual financial statements are presented in South African Rand, which is the functional currency of the entity.

1.2 Going concern assumption

These annual financial statements have been prepared based on the expectation that the entity will continue to operate as a going concern for at least the next 12 months.

1.3 Significant judgements and sources of estimation uncertainty

In preparing the annual financial statements, management is required to make estimates and assumptions that affect the amounts represented in the annual financial statements and related disclosures. Use of available information and the application of judgement are inherent in the formation of estimates. Actual results in the future could differ from these estimates, which may be material to the annual financial statements. Significant judgements include:

Trade receivables and loans and receivables

The entity assesses its trade receivables and loans and receivables for impairment at the end of each reporting period. In determining whether an impairment loss should be recorded in surplus or deficit, the surplus makes judgements as to whether there is observable data indicating a measurable decrease in the estimated future cash flows from a financial asset. Each receivable is reviewed individually at year end.

Fair value estimation

The carrying value less impairment provision of trade receivables and payables are assumed to approximate their fair values. The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the entity for similar financial instruments.

Impairment testing

The recoverable amounts of cash-generating units and individual assets have been determined based on the higher of value-in-use calculations and fair values less costs to sell. These calculations require the use of estimates and assumptions.

The entity reviews and tests the carrying value of assets when events or changes in circumstances suggest that the carrying amount may not be recoverable. Assets are grouped

at the lowest level for which identifiable cash flows are largely independent of cash flows of other assets and liabilities. If there are indications that impairment may have occurred, estimates are prepared of expected future cash flows for each group of assets. Expected future cash flows used to determine the value in use of tangible assets are inherently uncertain and could materially change over time.

Provisions

Provisions were raised and management determined an estimate based on the information available. Additional disclosure of these estimates of provisions is included in note 17 - Provisions.

Post-retirement benefits

The present value of the post-retirement obligation depends on a number of factors that are determined on an actuarial basis using a number of assumptions. The assumptions used in determining the net cost/(income) include the discount rate. Any changes in these assumptions will impact on the carrying amount of post-retirement obligations.

Other key assumptions for post-retirement benefits are based on current market conditions. Additional information is disclosed in Note 8.

Effective interest rate

The entity used a prime-linked interest rate to discount future cash flows.

Property, plant and equipment and Intangible assets

The entity's management determines the estimated useful lives and residual values of property, plant and equipment and intangible assets. These assessments are made on an annual basis and use historical evidence and current economic factors to estimate the values.

Administrative computer equipment, office furniture and equipment, exhibits and motor vehicles are not componentised. These assets do not have significant parts that are considered to have an estimated useful life different to the estimated useful life of the asset as a whole.

1.4 Property, plant and equipment

Property, plant and equipment are tangible non-current assets (including infrastructure assets) that are held for use in the production or supply of goods or services, rental to others, or for administrative purposes, and are expected to be used during more than one period.

The cost of an item of property, plant and equipment is recognised as an asset when:

- it is probable that future economic benefits or service potential associated with the item will flow to the entity; and
- the cost of the item can be measured reliably.

Property, plant and equipment are initially measured at cost.

The cost of an item of property, plant and equipment is the purchase price and other costs attributable to bring the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Trade discounts and rebates are deducted in arriving at the cost.

Where an asset is acquired through a non-exchange transaction, its cost is its fair value as at date of acquisition.

Where an item of property, plant and equipment is acquired in exchange for a non-monetary asset or monetary assets, or a combination of monetary and non-monetary assets, the asset acquired is initially measured at fair value (the cost). If the acquired item's fair value was not determinable, its deemed cost is the carrying amount of the asset(s) given up.

When significant components of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Costs include costs incurred initially to acquire or construct an item of property, plant and equipment and costs incurred subsequently to add to, replace part of, or service it. If a replacement cost is recognised in the carrying amount of an item of property, plant and equipment, the carrying amount of the replaced part is derecognised.

The initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located is also included in the cost of property, plant and equipment, where the entity is obligated to incur such expenditure, and where the obligation arises as a result of acquiring the asset or using it for purposes other than the production of inventories.

Recognition of costs in the carrying amount of an item of property, plant and equipment ceases when the item is in the location and condition necessary for it to be capable of operating in the manner intended by management.

Items such as spare parts, standby equipment and servicing equipment are recognised when they meet the definition of property, plant and equipment.

Major inspection costs which are a condition of continuing use of an item of property, plant and equipment and which meet the recognition criteria above, are included as a replacement in the cost of the item of property, plant and equipment. Any remaining inspection costs from the previous inspection are derecognised.

Property, plant and equipment are carried at cost less accumulated depreciation and any impairment losses.

Property, plant and equipment are depreciated on the straight line basis over their expected useful lives to their estimated residual value.

The useful lives of items of property, plant and equipment have been assessed as follows:

Item	Depreciation method	Average useful life
Buildings	Straight line	2 – 48 years
Machinery and equipment	Straight line	5 – 10 years
Office furniture	Straight line	3 – 30 years
Motor vehicles	Straight line	5 – 12 years
Office equipment	Straight line	3 – 25 years
IT equipment	Straight line	3 – 13 years
Infrastructure	Straight line	5 – 25 years
Exhibits	Straight line	5 – 10 years
Books and journals	Straight line	5 – 10 years
Research equipment	Straight line	2 – 27 years
Leased assets	Straight line	The shorter of the lease term and the useful life

The residual value, and the useful life and depreciation method of each asset are reviewed at the end of each reporting date. If the expectations differ from previous estimates, the change is accounted for as a change in accounting estimate.

Reviewing the useful life of an asset on an annual basis does not require the entity to amend the previous estimate unless expectations differ from the previous estimate.

Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

The depreciation charge for each period is recognised in surplus or deficit unless it is included in the carrying amount of another asset.

Items of property, plant and equipment are derecognised when the asset is disposed of or when there are no further economic benefits or service potential expected from the use of the asset.

The gain or loss arising from the derecognition of an item of property, plant and equipment is included in surplus or deficit when the item is derecognised. The gain or loss arising from the derecognition of an item of property, plant and equipment is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item.

Zoological animals

Zoological animals have not been included as an asset on the statement of financial position. The reason is that the essential recognition criteria of measurement for recognising assets cannot be met for the majority of the animals.

The majority of zoological animals are received as donations, transfers from other zoos or from births. As a result, they do not have a cost.

In addition, it is considered impracticable to assign a fair value to the animals for a variety of reasons. These reasons include, amongst others, considerations such as the lack of a market for the majority of the animals because they are not commodities, as well as restrictions on the trade of exotic animals, which preclude the determination of a fair value.

The animals for which it may be possible to determine an arbitrary value approximate 8% of the total animal collection. It is the view of the NRF that it is unethical and not in the best interest of the National Zoological Gardens (NZG) to attach values to these animals. In addition, the NZG is not in the business of trading with these animals.

Therefore, on the basis that many species cannot be valued and any attempt to attach values to any species may be unethical, it was considered that any assessment of value would be misleading to the users of the financial statements.

1.5 Intangible assets

An intangible asset is identifiable if it either:

- is separable, i.e. is capable of being separated or divided from an entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable assets or liability, regardless of whether the entity intends to do so; or
- arises from binding arrangements (including rights from contracts), regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

A binding arrangement describes an arrangement that confers similar rights and obligations on the parties to it as if it were in the form of a contract.

An intangible asset is recognised when:

- it is probable that the expected future economic benefits or service potential that are attributable to the asset will flow to the entity; and
- the cost or fair value of the asset can be measured reliably.

The entity assesses the probability of expected future economic benefits or service potential using reasonable and supportable assumptions that represent management's best estimate of the set of economic conditions that will exist over the useful life of the asset.

Where an intangible asset is acquired through a non-exchange transaction, its initial cost at the date of acquisition is measured at its fair value as at that date.

Expenditure on research (or on the research phase of an internal project) is recognised as an expense when it is incurred.

An intangible asset arising from development (or from the development phase of an internal project) is recognised when:

- it is technically feasible to complete the asset so that it will be available for use or sale.
- there is an intention to complete and use or sell it.
- there is an ability to use or sell it.
- it will generate probable future economic benefits or service potential.
- there are available technical, financial and other resources to complete the development and to use or sell the asset.
- the expenditure attributable to the asset during its development can be measured reliably.

Intangible assets are carried at cost less any accumulated amortisation and any impairment losses.

An intangible asset is regarded as having an indefinite useful life when, based on all relevant factors, there is no foreseeable limit to the period over which the asset is expected to generate net cash inflows or service potential. Amortisation is not provided for these intangible assets, but they are tested for impairment annually and whenever there is an indication that the asset may be impaired. For all other intangible assets, amortisation is provided on a straight line basis over their useful life.

The amortisation period and the amortisation method for intangible assets are reviewed at each reporting date.

Reassessing the useful life of an intangible asset with a finite useful life after it was classified as indefinite is an indicator that the asset may be impaired. As a result the asset is tested for impairment and the remaining carrying amount is amortised over its useful life.

Internally generated brands, mastheads, publishing titles, customer lists and items similar in substance are not recognised as intangible assets.

Internally generated goodwill is not recognised as an intangible asset.

Amortisation is provided to write down the intangible assets, on a straight line basis, to their residual values as follows:

Item	Useful life
Computer software	3 – 10 years

Intangible assets are derecognised:

- on disposal; or
- when no future economic benefits or service potential are expected from its use or disposal.

The gain or loss arising from the derecognition of an intangible asset is included in surplus or deficit when the asset is derecognised.

1.6 Heritage assets

Heritage assets are assets that have a cultural, environmental, historical, natural, scientific, technological or artistic significance and are held indefinitely for the benefit of present and future generations.

An inalienable item is an asset that an entity is required by law or otherwise to retain indefinitely and cannot be disposed of without consent.

Recognition

The entity recognises a heritage asset as an asset if it is probable that future economic benefits or service potential associated with the asset will flow to the entity, and the cost or fair value of the asset can be measured reliably.

Initial measurement

Heritage assets are measured at cost.

Where a heritage asset is acquired through a non-exchange transaction, its cost is measured at its fair value as at the date of acquisition.

Subsequent measurement

After recognition as an asset, a class of heritage assets is carried at its cost less any accumulated impairment losses.

Impairment

The entity assesses at each reporting date whether there is an indication that it may be impaired. If any such indication exists, the entity estimates the recoverable amount or the recoverable service amount of the heritage asset.

Transfers

Transfers from heritage assets are only made when the particular asset no longer meets the definition of a heritage asset.

Transfers to heritage assets are only made when the asset meets the definition of a heritage asset.

Derecognition

The entity derecognises heritage assets on disposal, or when no future economic benefits or service potential are expected from its use or disposal.

The gain or loss arising from the derecognition of a heritage asset is included in surplus or deficit when the item is derecognised.

1.7 Investments in associates

An investment in an associate is carried at cost less any accumulated impairment.

An investment in an associate is initially accounted for at cost and subsequently using the equity method of accounting. An associate is an entity over which the NRF is in a position to exercise significant influence, but not control, through participation in the financial and operating policy decisions of the investee. Significant infuence is presumed to exist when the entity holds between 20 and 50 percent of the voting power of another entity. The NRF's share of the total recognised gains and losses of associates is recognised in the financial statements, from the date that significant influence commences until the date the significant influence ceases, using the equity method of accounting. The financial statements of the associate are prepared using uniform accounting policies and the associate has the same year-end as the NRF.

When the entity's share of losses exceeds its interest in the associate, the carrying amount of the investment, including any long-term interests that form part of the investment, is reduced to zero and the recognition of future losses is discontinued, except to the extent that the entity has an obligation or has made payments on behalf of the associate.

1.8 Financial instruments

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or a residual interest of another entity.

The amortised cost of a financial asset or financial liability is the amount at which the financial asset or financial liability is measured at initial recognition minus principal repayments, plus or minus the cumulative amortisation using the effective interest method of any difference between that initial amount and the maturity amount, and minus any reduction (directly or through the use of an allowance account) for impairment or uncollectibility.

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation.

Currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

Derecognition is the removal of a previously recognised financial asset or financial liability from an entity's statement of financial position.

The effective interest method is a method of calculating the amortised cost of a financial asset or a financial liability (or group of financial assets or financial liabilities) and of allocating the interest income or interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument or, when appropriate, a shorter period to the net carrying amount of the financial asset or financial liability. When calculating the effective interest rate, an entity shall estimate cash flows considering all contractual terms of the financial instrument (for example, prepayment, call and similar options) but shall not consider future credit losses. The calculation includes all fees and points paid or received between parties to the contract that are an integral part of the effective interest rate, transaction costs, and all other premiums or discounts. There is a presumption that the cash flows and the expected life of a group of similar financial instruments can be estimated reliably. However, in those rare cases when it is not possible to reliably estimate the cash flows or the expected life of a financial instrument (or group of financial instruments), the entity shall use the contractual cash flows over the full contractual term of the financial instrument (or group of financial instruments).

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable willing parties in an arm's length transaction.

A financial asset is:

- cash;
- a residual interest of another entity; or
- a contractual right to:
  - receive cash or another financial asset from another entity; or
  - exchange financial assets or financial liabilities with another entity under conditions that are potentially favourable to the entity.

A financial liability is any liability that is a contractual obligation to:

- deliver cash or another financial asset to another entity; or
- exchange financial assets or financial liabilities under conditions that are potentially unfavourable to the entity.

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates.

Liquidity risk is the risk encountered by an entity in the event of difficulty in meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset.

Loan commitment is a firm commitment to provide credit under pre-specified terms and conditions.

Loans payable are financial liabilities, other than short-term payables on normal credit terms.

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk comprises three types of risk: currency risk, interest rate risk and other price risk.

Other price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices (other than those arising from interest rate risk or currency risk), whether those changes are caused by factors specific to the individual financial instrument or its issuer, or factors affecting all similar financial instruments traded in the market.

A financial asset is past due when a counterparty has failed to make a payment when contractually due.

Financial instruments at amortised cost are non-derivative financial assets or non-derivative financial liabilities that have fixed or determinable payments, excluding those instruments that:

- the entity designates at fair value at initial recognition; or
- are held for trading.

Financial instruments at cost are investments in residual interests that do not have a quoted market price in an active market, and whose fair value cannot be reliably measured.

Classification

The entity has the following types of financial assets (classes and category) as reflected on the face of the statement of financial position or in the notes thereto:

Class	Category
Trade and other receivables	Financial asset measured at amortised cost
Cash and cash equivalents	Financial asset measured at amortised cost
Grant deposits	Financial asset measured at amortised cost

The entity has the following types of financial liabilities (classes and category) as reflected on the face of the statement of financial position or in the notes thereto:

Class	Category
Trade and other payables	Financial liability measured at amortised cost
Finance leases	Financial liability measured at amortised cost

Initial recognition

The entity recognises a financial asset or a financial liability in its statement of financial position when the entity becomes a party to the contractual provisions of the instrument.

The entity recognises financial assets using trade date accounting.

Initial measurement of financial assets and financial liabilities

The entity measures a financial asset and financial liability initially at its fair value plus transaction costs that are directly attributable to the acquisition or issue of the financial asset or financial liability.

Subsequent measurement of financial assets and financial liabilities

The entity measures all financial assets and financial liabilities after initial recognition using the following categories:

- Financial instruments at amortised cost.

All financial assets measured at amortised cost, or cost, are subject to an impairment review.

Fair value measurement considerations

The best evidence of fair value is quoted prices in an active market. If the market for a financial instrument is not active, the entity establishes fair value by using a valuation technique. The objective of using a valuation technique is to establish what the transaction price would have been on the measurement date in an arm's length exchange motivated by normal operating considerations. Valuation techniques include using recent arm's length market transactions between knowledgeable, willing parties, if available, reference to the current fair value of another instrument that is substantially the same, discounted cash flow analysis and option pricing models. If there is a valuation technique commonly used by market participants to price the instrument and that technique has been demonstrated to provide reliable estimates of prices obtained in actual market transactions, the entity uses that technique. The chosen valuation technique makes maximum use of market inputs and relies as little as possible on entity-specific inputs. It incorporates all factors that market participants would consider in setting a price and is consistent with accepted economic

methodologies for pricing financial instruments. Periodically, an entity calibrates the valuation technique and tests it for validity using prices from any observable current market transactions in the same instrument (i.e. without modification or repackaging) or based on any available observable market data.

The fair value of a financial liability with a demand feature (e.g. a demand deposit) is not less than the amount payable on demand, discounted from the first date that the amount could be required to be paid.

Gains and losses

For financial assets and financial liabilities measured at amortised cost or cost, a gain or loss is recognised in surplus or deficit when the financial asset or financial liability is derecognised or impaired, or through the amortisation process.

Impairment and uncollectibility of financial assets

The entity assesses at the end of each reporting period whether there is any objective evidence that a financial asset or group of financial assets is impaired.

Financial assets measured at amortised cost:
If there is objective evidence that an impairment loss on financial assets measured at amortised cost has been incurred, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. The carrying amount of the asset is reduced directly OR through the use of an allowance account. The amount of the loss is recognised in surplus or deficit.

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, the previously recognised impairment loss is reversed directly OR by adjusting an allowance account. The reversal does not result in a carrying amount of the financial asset that exceeds what the amortised cost would have been had the impairment not been recognised at the date the impairment is reversed. The amount of the reversal is recognised in surplus or deficit.

Derecognition

Financial assets

The entity derecognises financial assets using trade date accounting.

The entity derecognises a financial asset only when:

- the contractual rights to the cash flows from the financial asset expire, are settled or waived;
- the entity transfers to another party substantially all of the risks and rewards of ownership of the financial asset; or
- the entity, despite having retained some significant risks and rewards of ownership of the financial asset, has transferred control of the asset to another party and the other party has the practical ability to sell the asset in its entirety to an unrelated third party, and is able to exercise that ability unilaterally and without needing to impose additional restrictions on the transfer. In this case, the entity:
  - derecognises the asset; and
  - recognises separately any rights and obligations created or retained in the transfer.

On derecognition of a financial asset in its entirety, the difference between the carrying amount and the sum of the consideration received is recognised in surplus or deficit.

Financial liabilities

The entity removes a financial liability (or a part of a financial liability) from its statement of financial position when it is extinguished — i.e. when the obligation specified in the contract expires or is discharged, cancelled or waived.

The difference between the carrying amount of a financial liability (or part of a financial liability) extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognised in surplus or deficit. Any liabilities that are waived, forgiven or assumed by another entity by way of a non-exchange transaction are accounted for in accordance with the Standard of GRAP on Revenue from Non-exchange Transactions (Taxes and Transfers).

Presentation

Interest relating to a financial instrument or a component that is a financial liability is recognised as revenue or expense in surplus or deficit.

Losses and gains relating to a financial instrument or a component that is a financial liability is recognised as revenue or expense in surplus or deficit.

A financial asset and a financial liability are only offset and the net amount presented in the statement of financial position when the entity currently has a legally enforceable right to set off the recognised amounts and intends either to settle on a net basis, or to realise the asset and settle the liability simultaneously.

In accounting for a transfer of a financial asset that does not qualify for derecognition, the entity does not offset the transferred asset and the associated liability.

1.9 Tax

Tax expenses

The NRF is exempt from paying income tax and Value-Added Tax (VAT).

1.10 Leases

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership. A lease is classified as an operating lease if it does not transfer substantially all the risks and rewards incidental to ownership.

Finance leases – lessee

Finance leases are recognised as assets and liabilities in the statement of financial position at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments. The corresponding liability to the lessor is included in the statement of financial position as a finance lease obligation.

The discount rate used in calculating the present value of the minimum lease payments is the interest rate implicit in the lease.

Minimum lease payments are apportioned between the finance charge and reduction of the outstanding liability. The finance charge is allocated to each period during the lease term so as to produce a constant periodic rate of reduction on the remaining balance of the liability.

Any contingent rents are expensed in the period in which they are incurred.

Operating leases – lessor

Operating lease revenue is recognised as revenue on a straight-line basis over the lease term.

Initial direct costs incurred in negotiating and arranging operating leases are added to the carrying amount of the leased asset and recognised as an expense over the lease term on the same basis as the lease revenue.

Income for leases is disclosed under revenue in the statement of financial performance.

Operating leases – lessee

Operating lease payments are recognised as an expense on a straight-line basis over the lease term. The difference between the amounts recognised as an expense and the contractual payments is recognised as an operating lease asset or liability.

1.11 Inventories

Inventories are initially measured at cost except where inventories are acquired through a non-exchange transaction, then their costs are their fair value as at the date of acquisition.

Subsequently inventories are measured at the lower of cost and net realisable value.

Net realisable value is the estimated selling price in the ordinary course of operations less the estimated costs of completion and the estimated costs necessary to make the sale, exchange or distribution.

The cost of inventories comprises all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition.

The cost of inventories is assigned using the first-in, first-out (FIFO) formula, except restaurant- and animal-related inventory that uses the weighted average method. The same

cost formula is used for all inventories having a similar nature and use to the entity.

When inventories are sold, the carrying amounts of those inventories are recognised as an expense in the period in which the related revenue is recognised. If there is no related revenue, the expenses are recognised when the goods are distributed, or related services are rendered. The amount of any write-down of inventories to net realisable value or current replacement cost and all losses of inventories are recognised as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realisable value or current replacement cost, is recognised as a reduction in the amount of inventories recognised as an expense in the period in which the reversal occurs.

1.12 Impairment of cash-generating assets

Cash-generating assets are assets managed with the objective of generating a commercial return. An asset generates a commercial return when it is deployed in a manner consistent with that adopted by a profit-oriented entity.

Impairment is a loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation/(amortisation).

Carrying amount is the amount at which an asset is recognised in the statement of financial position after deducting any accumulated depreciation and accumulated impairment losses thereon.

A cash-generating unit is the smallest identifiable group of assets managed with the objective of generating a commercial return that generates cash inflows from continuing use that are largely independent of the cash inflows from other assets or groups of assets.

Identification

When the carrying amount of a cash-generating asset exceeds its recoverable amount, it is impaired.

The entity assesses at each reporting date whether there is any indication that a cash-generating asset may be impaired. If any such indication exists, the entity estimates the recoverable amount of the asset.

Irrespective of whether there is any indication of impairment, the entity also tests a cash-generating intangible asset with an indefinite useful life or a cash-generating intangible asset not yet available for use for impairment annually by comparing its carrying amount with its recoverable amount. This impairment test is performed at the same time every year. If an intangible asset was initially recognised during the current reporting period, that intangible asset was tested for impairment before the end of the current reporting period.

Value in use

Value in use of a cash-generating asset is the present value of the estimated future cash flows expected to be derived from the continuing use of an asset and from its disposal at the end of its useful life.

When estimating the value in use of an asset, the entity estimates the future cash inflows and outflows to be derived from continuing use of the asset and from its ultimate disposal and the entity applies the appropriate discount rate to those future cash flows.

Discount rate

The discount rate is a pre-tax rate that reflects current market assessments of the time value of money, represented by the current risk-free rate of interest and the risks specific to the asset for which the future cash flow estimates have not been adjusted.

Recognition and measurement (individual asset)

If the recoverable amount of a cash-generating asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount. This reduction is an impairment loss.

An impairment loss is recognised immediately in surplus or deficit.

When the amount estimated for an impairment loss is greater than the carrying amount of the cash-generating asset to which it relates, the entity recognises a liability only to the extent that is a requirement in the Standard of GRAP.

After the recognition of an impairment loss, the depreciation/(amortisation) charge for the cash-generating asset is adjusted in future periods to allocate the cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

Cash-generating units

If there is any indication that an asset may be impaired, the recoverable amount is estimated for the individual asset. If it is not possible to estimate the recoverable amount for the individual asset, the entity determines the recoverable amount of the cash-generating unit to which the asset belongs (the asset's cash-generating unit).

If an active market exists for the output produced by an asset or group of assets, that asset or group of assets is identified as a cash-generating unit, even if some or all of the output is used internally. If the cash inflows generated by any asset or cash-generating unit are affected by internal transfer pricing, the entity uses management's best estimate of future price(s) that could be achieved in arm's length transactions in estimating:

- the future cash inflows used to determine the asset's or cash-generating unit's value in use; and
- the future cash outflows used to determine the value in use of any other assets or cash-generating units that are affected by the internal transfer pricing.

Cash-generating units are identified consistently from period to period for the same asset or types of assets, unless a change is justified.

The carrying amount of a cash-generating unit is determined on a basis consistent with the way the recoverable amount of the cash-generating unit is determined.

An impairment loss is recognised for a cash-generating unit if the recoverable amount of the unit is less than the carrying amount of the unit. The impairment is allocated to reduce the carrying amount of the cash-generating assets of the unit on a pro-rata basis, based on the carrying amount of each asset in the unit. These reductions in carrying amounts are treated as impairment losses on individual assets.

In allocating an impairment loss, the entity does not reduce the carrying amount of an asset below the highest of:

- its fair value less costs to sell (if determinable);
- its value in use (if determinable); and
- zero.

The amount of the impairment loss that would otherwise have been allocated to the asset is allocated pro-rata to the other cash-generating assets of the unit.

Where a non-cash-generating asset contributes to a cash-generating unit, a proportion of the carrying amount of that non-cash-generating asset is allocated to the carrying amount of the cash-generating unit prior to estimation of the recoverable amount of the cash-generating unit.

Reversal of impairment loss

The entity assesses at each reporting date whether there is any indication that an impairment loss recognised in prior periods for a cash-generating asset may no longer exist or may have decreased. If any such indication exists, the entity estimates the recoverable amount of that asset.

An impairment loss recognised in prior periods for a cash-generating asset is reversed if there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised. The carrying amount of the asset is increased to its recoverable amount. The increase is a reversal of an impairment loss. The increased carrying amount of an asset attributable to a reversal of an impairment loss does not exceed the carrying amount that would have been determined (net of depreciation or amortisation) had no impairment loss been recognised for the asset in prior periods.

A reversal of an impairment loss for a cash-generating asset is recognised immediately in surplus or deficit.

After a reversal of an impairment loss is recognised, the depreciation/(amortisation) charge for the cash-generating asset is adjusted in future periods to allocate the cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

A reversal of an impairment loss for a cash-generating unit is allocated to the cash-generating assets of the unit pro-rata with the carrying amounts of those assets. These increases

in carrying amounts are treated as reversals of impairment losses for individual assets. No part of the amount of such a reversal is allocated to a non-cash-generating asset contributing service potential to a cash-generating unit.

In allocating a reversal of an impairment loss for a cash-generating unit, the carrying amount of an asset is not increased above the lower of:

- its recoverable amount (if determinable); and
- the carrying amount that would have been determined (net of amortisation or depreciation) had no impairment loss been recognised for the asset in prior periods.

The amount of the reversal of the impairment loss that would otherwise have been allocated to the asset is allocated pro-rata to the other assets of the unit.

Redesignation

The redesignation of assets from a cash-generating asset to a non-cash-generating asset or from a non-cash-generating asset to a cash-generating asset only occurs when there is clear evidence that such a redesignation is appropriate.

1.13 Impairment of non-cash-generating assets

Non-cash-generating assets are assets other than cash-generating assets.

Impairment is a loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation/(amortisation).

Identification

When the carrying amount of a non-cash-generating asset exceeds its recoverable service amount, it is impaired.

The entity assesses at each reporting date whether there is any indication that a non-cash-generating asset may be impaired. If any such indication exists, the entity estimates the recoverable service amount of the asset.

Irrespective of whether there is any indication of impairment, the entity also tests a non-cash-generating intangible asset with an indefinite useful life or a non-cash-generating intangible asset not yet available for use for impairment annually by comparing its carrying amount with its recoverable service amount. This impairment test is performed at the same time every year. If an intangible asset was initially recognised during the current reporting period, that intangible asset was tested for impairment before the end of the current reporting period.

Value in use

Value in use of non-cash-generating assets is the present value of the non-cash-generating assets' remaining service potential.

Recognition and measurement

If the recoverable service amount of a non-cash-generating asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable service amount. This reduction is an impairment loss.

An impairment loss is recognised immediately in surplus or deficit.

When the amount estimated for an impairment loss is greater than the carrying amount of the non-cash-generating asset to which it relates, the entity recognises a liability only to the extent that is a requirement in the Standards of GRAP.

After the recognition of an impairment loss, the depreciation/(amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

Reversal of an impairment loss

The entity assesses at each reporting date whether there is any indication that an impairment loss recognised in prior periods for a non-cash-generating asset may no longer exist or may have decreased. If any such indication exists, the entity estimates the recoverable service amount of that asset.

An impairment loss recognised in prior periods for a non-cash-generating asset is reversed if there has been a change in the estimates used to determine the asset's recoverable service amount since the last impairment loss was recognised. The carrying amount of the asset is increased to its recoverable service amount. The increase is a reversal of an impairment loss. The increased carrying amount of an asset attributable to

a reversal of an impairment loss does not exceed the carrying amount that would have been determined (net of depreciation or amortisation) had no impairment loss been recognised for the asset in prior periods.

A reversal of an impairment loss for a non-cash-generating asset is recognised immediately in surplus or deficit.

After a reversal of an impairment loss is recognised, the depreciation/(amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

1.14 Grant deposits

The NRF advances funding to higher education and research institutions in the form of grant deposits. The advances are calculated based on the expected grant awards for the year. The balance is reviewed annually by the NRF to determine the adequacy of the amount. The advances are done in order to facilitate adequate cash flow for the grant-making process at these institutions. Grant deposits must be preserved and maintained at the approved normal level. Per agreement, the interest earned on the grant deposits by the institutions is used to fund staff of the institutions that are dedicated to the NRF grant administration process. Should the interest earned be more than funding requisites to fund extra human capacity for staff supporting NRF projects, the institution has the right to utilise such amounts for research purposes as it deems appropriate. The approved normal level of grant deposits are repayable to the NRF on 30 days' notice in an event of the funding being discontinued.

1.15 Grants paid in advance

Grant advances to grant holders represent advances paid on specific grant awards, for which the conditions of grants were finalised, and the specific grant awards released by the NRF. The balance of the grant advances is depleted as and when the recognition criteria for grants and bursaries expenditure are met, i.e. approved and validated claims.

1.16 Employee benefits

Employee benefits are all forms of consideration given by an entity in exchange for services rendered by employees.

Termination benefits are employee benefits payable as a result of either:

- an entity's decision to terminate an employee's employment before the normal retirement date; or
- an employee's decision to accept voluntary redundancy in exchange for those benefits.

Other long-term employee benefits are employee benefits (other than post-employment benefits and termination benefits) that are not due to be settled within twelve months after the end of the period in which the employees render the related service.

Vested employee benefits are employee benefits that are not conditional on future employment.

Short-term employee benefits

Short-term employee benefits are employee benefits (other than termination benefits) that are due to be settled within twelve months after the end of the period in which the employees render the related service.

Short-term employee benefits include items such as:

- wages, salaries and social security contributions;
- short-term compensated absences (such as paid annual leave and paid sick leave) where the compensation for the absences is due to be settled within twelve months after the end of the reporting period in which the employees render the related employee service;
- bonus, incentive and performance-related payments payable within twelve months after the end of the reporting period in which the employees render the related service; and
- non-monetary benefits (for example, medical care and free or subsidised goods or services such as housing, cars and cell phones) for current employees.

When an employee has rendered service to the entity during a reporting period, the entity recognises the undiscounted amount of short-term employee benefits expected to be paid in exchange for that service:

- as a liability (accrued expense), after deducting any amount already paid. If the amount already paid exceeds the undiscounted amount of the benefits, the entity recognises that excess as an asset (prepaid expense) to the extent

that the prepayment will lead to, for example, a reduction in future payments or a cash refund; and
- as an expense, unless another Standard requires or permits the inclusion of the benefits in the cost of an asset.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs. The entity measures the expected cost of accumulating compensated absences as the additional amount that the entity expects to pay as a result of the unused entitlement that has accumulated at the reporting date.

The entity recognises the expected cost of bonus, incentive and performance-related payments when the entity has a present legal or constructive obligation to make such payments as a result of past events and a reliable estimate of the obligation can be made. A present obligation exists when the entity has no realistic alternative but to make the payments.

Post-employment benefits

Post-employment benefits are employee benefits (other than termination benefits) which are payable after the completion of employment.

Post-employment benefit plans are formal or informal arrangements under which an entity provides post-employment benefits for one or more employees.

Post-employment benefits: Defined contribution plans

Defined contribution plans are post-employment benefit plans under which an entity pays fixed contributions into a separate entity (a fund) and will have no legal or constructive obligation to pay further contributions if the fund does not hold sufficient assets to pay all employee benefits relating to employee service in the current and prior periods.

When an employee has rendered service to the entity during a reporting period, the entity recognises the contribution payable to a defined contribution plan in exchange for that service:
- as a liability (accrued expense), after deducting any contribution already paid. If the contribution already paid exceeds the contribution due for service before the reporting date, an entity recognises that excess as an asset (prepaid expense) to the extent that the prepayment will lead to, for example, a reduction in future payments or a cash refund; and
- as an expense, unless another Standard requires or permits the inclusion of the contribution in the cost of an asset.

Actuarial assumptions

Actuarial assumptions are unbiased and mutually compatible.

Financial assumptions are based on market expectations, at the reporting date, for the period over which the obligations are to be settled.

The rate used to discount post-employment benefit obligations (both funded and unfunded) reflects the time value of money. The currency and term of the financial instrument selected to reflect the time value of money are consistent with the currency and estimated term of the post-employment benefit obligations.

Post-employment benefit obligations are measured on a basis that reflects:
- estimated future salary increases;
- the benefits set out in the terms of the plan (or resulting from any constructive obligation that goes beyond those terms) at the reporting date; and
- estimated future changes in the level of any state benefits that affect the benefits payable under a defined benefit plan, if, and only if, either:
  - those changes were enacted before the reporting date; or
  - past history, or other reliable evidence, indicates that those state benefits will change in some predictable manner, for example, in line with future changes in general price levels or general salary levels.

Assumptions about medical costs take account of estimated future changes in the cost of medical services, resulting from both inflation and specific changes in medical costs.

Other post-retirement obligations

The entity provides post-retirement health care benefits upon retirement to some retirees.

The entitlement to post-retirement health care benefits is based on the employee remaining in service up to retirement age and the completion of a minimum service period.

The expected costs of these benefits are accrued over the period of employment. Independent qualified actuaries carry out valuations of these obligations at least every three years.

The amount recognised as a liability for other long-term employee benefits is the net total of the following amounts:

- the present value of the defined benefit obligation at the reporting date;
- minus the fair value at the reporting date of plan assets (if any) out of which the obligations are to be settled directly.

The entity shall recognise the net total of the following amounts as expense or revenue, except to the extent that another Standard requires or permits their inclusion in the cost of an asset:

- current service cost;
- interest cost;
- the expected return on any plan assets and on any reimbursement right recognised as an asset;
- actuarial gains and losses, which shall all be recognised immediately;
- past service cost, which shall all be recognised immediately; and
- the effect of any curtailments or settlements.

1.17 Provisions and contingencies

Provisions are recognised when:

- the entity has a present obligation as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation; and
- a reliable estimate can be made of the obligation.

The amount of a provision is the best estimate of the expenditure expected to be required to settle the present obligation at the reporting date.

Where the effect of time value of money is material, the amount of a provision is the present value of the expenditures expected to be required to settle the obligation.

Where some or all of the expenditure required to settle a provision is expected to be reimbursed by another party, the reimbursement is recognised when, and only when, it is virtually certain that reimbursement will be received if the entity settles the obligation. The reimbursement is treated as a separate asset. The amount recognised for the reimbursement does not exceed the amount of the provision.

Provisions are reviewed at each reporting date and adjusted to reflect the current best estimate. Provisions are reversed if it is no longer probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation.

Where discounting is used, the carrying amount of a provision increases in each period to reflect the passage of time. This increase is recognised as an interest expense.

A provision is used only for expenditures for which the provision was originally recognised.

Provisions are not recognised for future operating deficits.

If an entity has a contract that is onerous, the present obligation (net of recoveries) under the contract is recognised and measured as a provision.

Contingent assets and contingent liabilities are not recognised. Contingencies are disclosed in note 32.

1.18 Commitments

Items are classified as commitments when an entity has committed itself to future transactions that will normally result in the outflow of cash.

Disclosures are required in respect of unrecognised contractual commitments.

Commitments for which disclosure is necessary to achieve a fair presentation should be disclosed in a note to the financial statements, if both the following criteria are met:

- Contracts should be non-cancellable or only cancellable at significant cost (for example, contracts for computer or building maintenance services); and
- Contracts should relate to something other than the routine, steady, state business of the entity – therefore salary commitments relating to employment contracts or social security benefit commitments are excluded.

1.19 Revenue from exchange transactions

Revenue is the gross inflow of economic benefits or service potential during the reporting period when those inflows result in an increase in net assets.

An exchange transaction is one in which the entity receives assets or services, or has liabilities extinguished, and directly gives approximately equal value (primarily in the form of goods, services or use of assets) to the other party in exchange.

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

Measurement

Revenue is measured at the fair value of the consideration received or receivable, net of trade discounts and volume rebates.

Sale of goods

Revenue from the sale of goods is recognised when all the following conditions have been satisfied:

- the entity has transferred to the purchaser the significant risks and rewards of ownership of the goods;
- the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity; and
- the costs incurred or to be incurred in respect of the transaction can be measured reliably.

Sale of goods includes the sale of food and curios at the NZG and isotopes at iThemba LABS.

Rendering of services

When the outcome of a transaction involving the rendering of services can be estimated reliably, revenue associated with the transaction is recognised by reference to the stage of completion of the transaction at the reporting date. The outcome of a transaction can be estimated reliably when all the following conditions are satisfied:

- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity;
- the stage of completion of the transaction at the reporting date can be measured reliably; and
- the costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

When services are performed by an indeterminate number of acts over a specified time frame, revenue is recognised on a straight line basis over the specified time frame unless there is evidence that some other method better represents the stage of completion. When a specific act is much more significant than any other acts, the recognition of revenue is postponed until the significant act is executed.

When the outcome of the transaction involving the rendering of services cannot be estimated reliably, revenue is recognised only to the extent of the expenses recognised that are recoverable.

Service revenue is recognised by reference to the stage of completion of the transaction at the reporting date. Stage of completion is determined by services performed to date as a percentage of total services to be performed.

Service revenue includes fees for parking at the NZG and providing tours to the public at some business units.

Interest

Revenue arising from the use by others of entity assets yielding interest is recognised when:

- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity, and
- the amount of the revenue can be measured reliably.

Interest is recognised, in surplus or deficit, using the effective interest rate method.

Entrance fees

The NZG charges patrons an entrance fee to visit the NZG. This revenue is recognised at point of sale of the tickets.

1.20 Revenue from non-exchange transactions

Revenue comprises gross inflows of economic benefits or service potential received and receivable by an entity, which

represents an increase in net assets, other than increases relating to contributions from owners.

Conditions on transferred assets are stipulations that specify that the future economic benefits or service potential embodied in the asset is required to be consumed by the recipient as specified or future economic benefits or service potential must be returned to the transferor.

Non-exchange transactions are transactions that are not exchange transactions. In a non-exchange transaction, an entity either receives value from another entity without directly giving approximately equal value in exchange, or gives value to another entity without directly receiving approximately equal value in exchange.

Recognition

An inflow of resources from a non-exchange transaction recognised as an asset is recognised as revenue, except to the extent that a liability is also recognised in respect of the same inflow.

As the entity satisfies a present obligation recognised as a liability in respect of an inflow of resources from a non-exchange transaction recognised as an asset, it reduces the carrying amount of the liability recognised and recognises an amount of revenue equal to that reduction.

Measurement

Revenue from a non-exchange transaction is measured at the amount of the increase in net assets recognised by the entity.

When, as a result of a non-exchange transaction, the entity recognises an asset, it also recognises revenue equivalent to the amount of the asset measured at its fair value as at the date of acquisition, unless it is also required to recognise a liability. Where a liability is required to be recognised, it will be measured as the best estimate of the amount required to settle the obligation at the reporting date, and the amount of the increase in net assets, if any, recognised as revenue. When a liability is subsequently reduced, because a condition is satisfied, the amount of the reduction in the liability is recognised as revenue.

Gifts and donations, including goods in kind

Gifts and donations, including goods in kind, are recognised as assets and revenue when it is probable that the future economic benefits or service potential will flow to the entity and the fair value of the assets can be measured reliably.

Government grants and designated income

Government grants and designated income are recognised in the statement of financial performance, in the period to which the income relates. The government grant and designated income is recognised if there is reasonable assurance that the entity will comply with the conditions attached to the grant or contract, and that the grant or designated income will be received.

The portion of government grants and designated income that are earmarked for a specific purpose and thus conditional, relating to expenditure that will be incurred in future financial years, is reflected as income received in advance in the statement of financial position, as it represents an actual liability if conditions are not met.

1.21 Cost of sales

When inventories are sold, the carrying amount of those inventories is recognised as an expense in the period in which the related revenue is recognised. The amount of any write-down of inventories to net realisable value and all deficits of inventories are recognised as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realisable value, is recognised as a reduction in the amount of inventories recognised as an expense in the period in which the reversal occurs.

The related cost of providing services recognised as revenue in the current period is included in cost of sales.

Contract costs comprise:

- costs that relate directly to the specific contract;
- costs that are attributable to contract activity in general and can be allocated to the contract on a systematic and rational basis; and
- such other costs as are specifically chargeable to the customer under the terms of the contract.

1.22 Grants, bursaries and other research expenditure

Grants, bursaries and other research awarded are recognised as expenditure in the statement of financial performance in the period in which the grants, bursaries and other research are claimed and validated. Included in grants, bursaries and other research are membership affiliations to research science and technology organisations and councils as well as the funding for science activities.

1.23 Translation of foreign currencies

Foreign currency transactions

A foreign currency transaction is recorded, on initial recognition in Rand, by applying to the foreign currency amount the spot exchange rate between the functional currency and the foreign currency at the date of the transaction.

At each reporting date:

- foreign currency monetary items are translated using the closing rate;
- non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction; and
- non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

Exchange differences arising on the settlement of monetary items, or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous annual financial statements, are recognised in surplus or deficit in the period in which they arise.

Cash flows arising from transactions in a foreign currency are recorded in Rand by applying to the foreign currency amount the exchange rate between the Rand and the foreign currency at the date of the cash flow.

1.24 Comparative figures

Where necessary, comparative figures have been reclassified to conform to changes in presentation in the current year.

1.25 Fruitless and wasteful expenditure

Fruitless and wasteful expenditure means expenditure which was made in vain, and would have been avoided had reasonable care been exercised.

All expenditure relating to fruitless and wasteful expenditure is recognised as an expense in the statement of financial performance in the year that the expenditure was incurred. The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the statement of financial performance.

1.26 Irregular expenditure

Irregular expenditure, as defined in section 1 of the PFMA (Act no. 1 of 1999), is expenditure other than unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation, including this Act.

1.27 Segment information

A segment is an activity of an entity:

- that generates economic benefits or service potential (including economic benefits or service potential relating to transactions between activities of the same entity);
- whose results are regularly reviewed by management to make decisions about resources to be allocated to that activity and in assessing its performance; and
- for which separate financial information is available.

Reportable segments are the actual segments which are reported on in the segment report. They are the segments identified above or alternatively an aggregation of two or more of those segments where the aggregation criteria are met.

Measurement

The amount of each segment item reported is the measure reported to management for the purposes of making decisions about allocating resources to the segment and assessing its performance. Adjustments and eliminations made in preparing the entity's financial statements and allocations of revenues and expenses are included in determining reported segment surplus or deficit only if they are included in the measure of the segment's surplus or deficit that is used by management. Similarly, only those assets and liabilities that are included in the measures of the segment's assets and segment's liabilities that are used by management are reported for that segment. If amounts are allocated to reported segment surplus or deficit, assets or liabilities, those amounts are allocated on a reasonable basis.

If management uses only one measure of a segment's surplus or deficit, the segment's assets or the segment's liabilities in assessing segment performance and deciding how to allocate resources, segment surplus or deficit, assets and liabilities are reported in terms of that measure. If management uses more than one measure of a segment's surplus or deficit, the segment's assets or the segment's liabilities, the reported measures are those that management believes are determined in accordance with the measurement principles most consistent with those used in measuring the corresponding amounts in the entity's financial statements.

1.28 Research and development expenditure

Expenditure on research is recognised as an expense when it is incurred.

An asset arising from development is recognised when:

- it is technically feasible to complete the asset so that it will be available for use or sale.
- there is an intention to complete and use or sell it.
- there is an ability to use or sell it.
- it will generate probable future economic benefits or service potential.
- there are available technical, financial and other resources to complete the development and to use or sell the asset.
- the expenditure attributable to the asset during its development can be measured reliably.

1.29 Budget information

The entity is typically subject to budgetary limits in the form of appropriations or budget authorisations (or equivalent) and designated funding, which is given effect through authorising legislation, appropriation or similar.

General purpose financial reporting by the entity shall provide information on whether resources were obtained and used in accordance with the legally adopted budget.

The approved budget is prepared on an accrual basis and presented by economic classification linked to performance outcome objectives.

The approved budget covers the fiscal period from 2015/04/01 to 2016/03/31. The budget for the economic entity includes the approved budgets of all the entities under its control.

The annual financial statements and the budget are prepared on the same basis of accounting, therefore a comparison with the budgeted amounts for the reporting period has been included in the Statement of comparison of budget and actual amounts.

Comparative information is not required.

1.30 Related parties

The entity operates in an economic sector currently dominated by entities directly or indirectly owned by the South African Government. As a consequence of the constitutional independence of the three spheres of government in South Africa, only entities within the national sphere of government are considered to be related parties.

Key management are those persons responsible for planning, directing and controlling the activities of the entity, including those charged with the governance of the entity in accordance with legislation, in instances where they are required to perform such functions. All individuals from the level of Corporate Executive up to the Board of Directors are regarded as key management.

Close members of the family of a person are considered to be those family members who may be expected to influence, or be influenced by, that management in their dealings with the entity.

Only transactions with related parties not at arm's length or not in the ordinary course of business are disclosed.

1.31 Capital fund

The proportion of income used to acquire property, plant and equipment, intangible assets and heritage assets is transferred to the capital fund from the accumulated surplus/(deficit) and is allocated back to the accumulated surplus/(deficit) in the proportions and over the periods in which depreciation/amortisation on such property, plant and equipment, intangible asset or heritage asset is charged or when the asset is retired.

1.32 Infrastructure fund

This fund represents funds set aside to fund future infrastructure and related projects. It can also be utilised for the decommissioning of assets, where applicable.

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

2. New standards and interpretations

2.1 Standards and interpretations effective and adopted in the current year

In the current year, the entity has adopted the following standards and interpretations that are effective for the current financial year and that are relevant to its operations:

GRAP 18: Segment-reporting

Segments are identified by the way in which information is reported to management, both for purposes of assessing performance and for making decisions about how future resources will be allocated to the various activities undertaken by the entity. The major classifications of activities identified in budget documentation will usually reflect the segments for which an entity reports information to management.

Segment information is presented based on service or geographical segments. Service segments relate to a distinguishable component of an entity that provides specific outputs or achieves particular operating objectives that are in line with the entity's overall mission. Geographical segments relate to specific outputs generated, or particular objectives achieved, by an entity within a particular region.

Directive 2 - Transitional provisions for public entities, municipal entities and constitutional institutions, states that no comparative segment information need to be presented on initial adoption of this standard.

The effective date of the standard is for years beginning on or after 1 April 2015.

The impact of the standard is not material, as similar segment information was previously reported in the annual financial statements.

2.2 Standards and interpretations issued, but not yet effective

The entity has not applied the following standards and interpretations, which have been published and are mandatory for the entity's accounting periods beginning on or after 1 April 2016 or later periods:

GRAP 20: Related parties

The objective of this standard is to ensure that a reporting entity's annual financial statements contain the disclosures necessary to draw attention to the possibility that its financial position and surplus or deficit may have been affected by the existence of related parties and by transactions and outstanding balances with such parties.

An entity that prepares and presents financial statements under the accrual basis of accounting (in this standard referred to as the reporting entity) shall apply this standard in:

- identifying related party relationships and transactions;
- identifying outstanding balances, including commitments, between an entity and its related parties;
- identifying the circumstances in which disclosure of the items in (a) and (b) is required; and
- determining the disclosures to be made about those items.

This standard requires disclosure of related party relationships, transactions and outstanding balances, including commitments, in the consolidated and separate financial statements of the reporting entity in accordance with the Standard of GRAP on Consolidated and Separate Financial Statements. This standard also applies to individual annual financial statements.

Disclosure of related party transactions, outstanding balances, including commitments, and relationships with related parties may affect users' assessments of the financial position and performance of the reporting entity and its ability to deliver agreed services, including assessments of the risks and opportunities facing the entity. This disclosure also ensures that the reporting entity is transparent about its dealings with related parties.

The standard states that a related party is a person or an entity with the ability to control or jointly control the other party, or exercise significant influence over the other party, or vice versa, or an entity that is subject to common control, or joint control. As a minimum, the following are regarded as related parties of the reporting entity:

A person or a close member of that person's family is related to the reporting entity if that person:

- has control or joint control over the reporting entity;
- has significant influence over the reporting entity;
- is a member of the management of the entity or its controlling entity.

An entity is related to the reporting entity if any of the following conditions apply:

- the entity is a member of the same economic entity (which means that each controlling entity, controlled entity and fellow controlled entity is related to the others);
- one entity is an associate or joint venture of the other entity (or an associate or joint venture of a member of an economic entity of which the other entity is a member);
- both entities are joint ventures of the same third party;
- one entity is a joint venture of a third entity and the other entity is an associate of the third entity;
- the entity is a post-employment benefit plan for the benefit of employees of either the entity or an entity related to the entity. If the reporting entity is itself such a plan, the sponsoring employers are related to the entity;
- the entity is controlled or jointly controlled by a person identified in (a); and
- a person identified in (a)(i) has significant influence over that entity or is a member of the management of that entity (or its controlling entity).

The standard furthermore states that a related party transaction is a transfer of resources, services or obligations between the reporting entity and a related party, regardless of whether a price is charged.

The standard elaborates on the definitions and identification of:

- Close member of the family of a person;
- Management;
- Related parties;
- Remuneration; and
- Significant influence.

The standard sets out the requirements, inter alia, for the disclosure of:

- Control;
- Related party transactions; and
- Remuneration of management.

The effective date of the standard is not yet set by the Minister of Finance.

The entity expects to adopt the standard for the first time when the Minister sets the effective date for the standard.

It is unlikely that the standard will have a material impact on the entity's annual financial statements, as similar accounting policies are already applied.

GRAP 108: Statutory receivables

The objective of this standard is to prescribe accounting requirements for the recognition, measurement, presentation and disclosure of statutory receivables.

It furthermore covers: Definitions, recognition, derecognition, measurement, presentation and disclosure, transitional provisions, as well as the effective date.

The effective date of the standard is not yet set by the Minister of Finance.

The entity expects to adopt the standard for the first time when the Minister sets the effective date for the standard.

It is unlikely that the standard will have a material impact on the entity's annual financial statements.

GRAP 109: Accounting by principals and agents

The objective of this standard is to outline principles to be used by an entity to assess whether it is party to a principal-agent arrangement, and whether it is a principal or an agent in undertaking transactions in terms of such an arrangement. The standard does not introduce new recognition or measurement requirements for revenue, expenses, assets and/or liabilities that result from principal-agent arrangements. The standard does however provide guidance on whether revenue, expenses, assets and/or liabilities should be recognised by an agent or a principal, and prescribes what information should be disclosed when an entity is a principal or an agent.

It furthermore covers definitions, identifying whether an entity is a principal or an agent, accounting by a principal or an agent, presentation, disclosure, transitional provisions and effective date.

The effective date of the standard is not yet set by the Minister of Finance.

The entity expects to adopt the standard for the first time when the Minister sets the effective date for the standard.

It is unlikely that the standard will have a material impact on the entity's annual financial statements.

GRAP 26 (as amended 2015): Impairment of cash-generating assets

The Accounting Standards Board (ASB) agreed to include a research project on its work programme to review GRAP 21 and GRAP 26 to assess whether the principles in these standards could be simplified and streamlined. As part of its research project, the ASB considered the following aspects, which led to the proposed amendments included in the Exposure Draft:

- simplifying the approach to impairment to make it clearer when an asset is cash-generating or non-cash-generating;
- assessing the feasibility of one measurement approach for non-cash-generating assets; and
- assessing the feasibility of combining the two standards.

Summary of changes:

The definitions of cash-generating assets and cash-generating unit have been amended to be consistent with the amendments made to clarify the objective of cash-generating assets and non-cash-generating assets.

Additional commentary has been added to clarify the objective of cash-generating assets and non-cash-generating assets. The requirement to disclose the criteria developed to distinguish cash-generating assets from non-cash-generating assets has been amended to be consistent with the amendments made to clarify the objective of non-cash-generating assets and cash-generating assets.

The effective date of the standard is for years beginning on or after 01 April 2017.

The entity expects to adopt the standard for the first time in the 2017 annual financial statements.

It is unlikely that the standard will have a material impact on the entity's annual financial statements.

3. Property, plant and equipment

	2016			2015		
	Cost/Valuation	Accumulated depreciation and accumulated impairment	Carrying value	Cost/Valuation	Accumulated depreciation and accumulated impairment	Carrying value
Land	29,898	-	29,898	29,898	-	29,898
Buildings	178,108	(42,714)	135,394	172,532	(36,109)	136,423
Plant and machinery	32,316	(11,049)	21,267	28,130	(8,300)	19,830
Furniture and fixtures	20,442	(11,103)	9,339	19,333	(10,091)	9,242
Motor vehicles	39,099	(20,411)	18,688	29,361	(17,106)	12,255
Office equipment	57,550	(37,810)	19,740	54,270	(33,918)	20,352
IT equipment	103,987	(64,220)	39,767	82,338	(55,867)	26,471
Infrastructure	339,735	(27,220)	312,515	326,511	(12,424)	314,087
Exhibits	6,464	(2,177)	4,287	4,893	(1,615)	3,278
Capital work in progress	824,200	-	824,200	525,576	-	525,576
Research equipment	487,852	(263,387)	224,465	415,803	(224,343)	191,460
Books and journals	944	(46)	898	151	(5)	146
Total	**2,120,595**	**(480,137)**	**1,640,458**	**1,688,796**	**(399,778)**	**1,289,018**

Reconciliation of property, plant and equipment – 2016

	2016					
	Opening balance	Additions	Disposals	Transfers	Depreciation	Total
Land	29,898	-	-	-	-	29,898
Buildings	136,423	1,109	(10)	4,624	(6,752)	135,394
Plant and machinery	19,830	4,401	(177)	-	(2,787)	21,267
Furniture and fixtures	9,242	1,802	(126)	-	(1,579)	9,339
Motor vehicles	12,255	10,910	(493)	-	(3,984)	18,688
Office equipment	20,352	4,358	(152)	-	(4,818)	19,740
IT equipment	26,471	12,620	(400)	12,322	(11,246)	39,767
Infrastructure	314,087	8,425	-	4,799	(14,796)	312,515
Exhibits	3,278	1,571	-	-	(562)	4,287
Capital work in progress	525,576	341,400	-	(42,776)	-	824,200
Research equipment	191,460	51,627	(307)	21,031	(39,346)	224,465
Books and journals	146	792	-	-	(40)	898
	1,289,018	**439,015**	**(1,665)**	**-**	**(85,910)**	**1,640,458**

Depreciation includes R 0.328m (2015: R 0.65m), relating to leased assets. Transfers during the year relate to assets capitalised from capital work in progress, upon completion of the assets.

Reconciliation of property, plant and equipment – 2015

	2015					
	Opening balance	Additions	Disposals	Transfers	Depreciation	Total
Land	29,898	-	-	-	-	29,898
Buildings	134,243	4,366	(130)	4,514	(6,570)	136,423
Plant and machinery	18,520	3,706	-	5	(2,401)	19,830
Furniture and fixtures	8,624	2,085	(37)	19	(1,449)	9,242
Motor vehicles	13,000	2,647	(280)	-	(3,112)	12,255
Office equipment	20,290	5,182	(115)	229	(5,234)	20,352
IT equipment	18,527	13,140	(161)	3,719	(8,754)	26,471
Infrastructure	164,553	333	-	161,492	(12,291)	314,087
Exhibits	3,130	533	-	38	(423)	3,278
Capital work in progress	451,500	264,947	-	(190,871)	-	525,576
Research equipment	192,754	16,751	(2,570)	19,835	(35,310)	191,460
Books and journals	7	143	-	-	(4)	146
	1,055,046	**313,833**	**(3,293)**	**(1,020)**	**(75,548)**	**1,289,018**

	2016 R'000	2015 R'000
Assets subject to finance lease (Net carrying amount)		
Office equipment	189	562

	2016 R'000	2015 R'000
Details of properties		
Portion 1 of the farm Scientia No 627, Pretoria, with buildings thereon		
Land	1,277	1,277
Building	30,791	26,162
	32,068	**27,439**
Portion 4 of the farm No 996, Blue Downs, Stellenbosch, with buildings thereon		
Land	9,717	9,717
Building	28,792	28,288
	38,509	**38,005**
Portion 6 of the farm Kuilenburg No 96, Sutherland, with buildings thereon		
Land	346	346
Building	8,079	7,939
	8,425	**8,285**
Erf 26423, Observatory, Cape Town, with buildings thereon		
Land	263	263
Building	7,723	7,657
	7,986	**7,920**
Stand No 2859, 211 Nana Sita Street, Pretoria, with buildings thereon		
Land	92	92
Building	1,567	1,557
	1,659	**1,649**
Portion 1 of Erf 1, Observatory, Johannesburg		
Land	1,685	1,685
Building	9,476	9,410
	11,161	**11,095**
Portion 1 of the farm Losberg No 73, Fraserburg Regional District		
Land	7,796	7,796
Building	51,781	51,752
	59,577	**59,548**
Mey's Dam Farm No 68, Fraserburg Regional District		
Land	8,722	8,722
Building	6,253	6,253
	14,975	**14,975**
Leasehold improvements, HartRAO		
- Capitalised expenditure	1,655	1,529
Leasehold improvements, SAIAB		
- Capitalised expenditure	21,476	21,470
Leasehold improvements, SKA (Klerefontein)		
- Capitalised expenditure	10,515	10,515
Total cost of land and buildings	**208,006**	**202,430**

The land and buildings situated in Pretoria, on the CSIR campus, are subject to a pre-emptive right in favour of the CSIR should the NRF decide to sell the property. It will revert back to the CSIR for no consideration should the NRF be disbanded.

Land and buildings of the NZG are situated in Boom Street, Pretoria. This property is not reflected in the records of the NRF as ownership thereof resides with the Department of Public Works. The NZG occupies the property for no consideration.

NZG animal collection

Refer to note 1.4 for reasons why no financial values are attached to the animal collection.

	2016 R'000	2015 R'000
Number of specimens:		
Mammals	1,346	1,304
Aves	1,099	1,129
Reptiles	303	249
Pisces	1,930	2,768
Amphibia	114	62
Invertebrates	445	444
	5,237	**5,956**

4. Intangible assets

	2016			2015		
	Cost/Valuation	Accumulated amortisation and accumulated impairment	Carrying value	Cost/Valuation	Accumulated amortisation and accumulated impairment	Carrying value
Computer software, under development	-	-	-	6,600	-	6,600
Computer software, other	68,718	(14,975)	53,743	61,000	(7,620)	53,380
Total	**68,718**	**(14,975)**	**53,743**	**67,600**	**(7,620)**	**59,980**

Reconciliation of intangible assets – 2016

	2016				
	Opening balance	Additions	Transfers	Amortisation	Total
Computer software, under development	6,600	-	(6,600)	-	-
Computer software, other	53,380	1,129	6,600	(7,366)	53,743
	59,980	**1,129**	**-**	**(7,366)**	**53,743**

Reconciliation of intangible assets – 2015

	2015				
	Opening balance	Additions	Transfers	Amortisation	Total
Computer software under development	54,583	7,994	(55,977)	-	6,600
Computer software, other	2,390	748	55,977	(5,735)	53,380
	56,973	**8,742**	**-**	**(5,735)**	**59,980**

5. Heritage assets

	2016			2015		
	Cost/Valuation	Accumulated impairment losses	Carrying value	Cost/Valuation	Accumulated impairment losses	Carrying value
Collections of rare books, manuscripts and records	53	-	53	54	-	54
Objects of scientific and technological interest	15,370	-	15,370	15,370	-	15,370
Historical structures and monuments	56	-	56	56	-	56
Total	**15,479**	**-**	**15,479**	**15,480**	**-**	**15,480**

Reconciliation of heritage assets – 2016

	2016		
	Opening balance	Disposals	Total
Collections of rare books, manuscripts and records	54	(1)	53
Objects of scientific and technological interest	15,370	-	15,370
Historical structures and monuments	56	-	56
	15,480	**(1)**	**15,479**

Reconciliation of heritage assets – 2015

	2015	
	Opening balance	Total
Collections of rare books, manuscripts and records	54	54
Objects of scientific and technological interest	15,370	15,370
Historical structures and monuments	56	56
	15,480	**15,480**

Heritage assets of which fair values cannot be reliably measured

Rare books

The SAAO hosts the National Library for Astronomy of South Africa. Some of the books are rare as they are handwritten, one of a kind and irreplaceable. The value of these books cannot be reliably measured as there is no market for them and they are irreplaceable. These books contributed significantly to the research output of the Observatory in the past and are being preserved for future generations. They are being kept for historical purposes only.

Sammy Marks fountain

The Sammy Marks fountain has been part of Pretoria's landscape for more than 115 years, having first been erected in Church Square. Sammy Marks presented the fountain to Pretoria in 1905. It served as a water supply point as well as for its ornamental value. The value of the fountain cannot be reliably measured as there is no market for it and it is irreplaceable.

National Biological Specimen Collection

The collection of museum specimens comprise over 100 000 containers of fish and other aquatic organisms such as amphibians, invertebrates and diatoms. Many of the specimens in the collection are unique and largely irreplaceable. There is also a molecular tissue bank of aquatic samples for genetic analysis and a dry collection of fish skeletons and otoliths. Some specimens date back more than 100 years. The biological collection is supported by scientific graphic images. The value of the collection cannot be reliably measured as there is no market for it and the collection is irreplaceable.

6. Investments in associates

Name of entity	Listed/Unlisted	% holding 2016	% holding 2015	Carrying amount 2016	Carrying amount 2015
SALT Foundation (Pty) Ltd.	Unlisted	34.77%	33.56%	22,795	25,763

The carrying amounts of associates are shown net of impairment losses.

	2016 R'000	2015 R'000
Movements in carrying value		
Opening balance	25,763	29,915
Share of surplus/(deficit)	(2,968)	(4,152)
	22,795	**25,763**

Principal activities, country of incorporation and voting power

Legal name	Principal activity	Country of incorporation	Proportion of voting power
SALT Foundation (Pty) Ltd.	Construction and operation of an 11-metre telescope for optical astronomy research	SA	34.77 %

Summary of associate's financial information

	2016 R'000	2015 R'000
Current assets	25,980	33,184
Non-current assets	168,152	168,446
Total liabilities	17,588	17,776
Revenue	30,800	28,398
Surplus/(deficit)	(8,534)	(12,373)

7. Other financial assets

	2016 R'000	2015 R'000
At amortised cost		
Grant deposit accounts	606,110	551,410
The approved normal level of grant deposits is repayable to the NRF on 30 days' notice, in an event of the funding being discontinued.		
Infrastructure bridging funding	21,040	21,544
Funding advanced to institutions for infrastructure, repayable in full to the NRF within 12 months. The funding is non-interest bearing.		
	627,150	**572,954**

8. Employee benefit obligations

Defined benefit plan

Post-retirement medical aid plan

The NRF undertook a buy-out exercise in the final quarter of the 2012 financial year. Offers were made to current and future pensioners on a voluntary basis. The NRF continues to have a subsidy obligation for those members who did not accept the offer. To manage the residual liability that has remained, the NRF has acquired an annuity policy which qualifies as a plan asset.

The amounts recognised in the statement of financial position are as follows:

	2016 R'000	2015 R'000
Carrying value		
Present value of the defined benefit obligation – partly or wholly funded	(12,355)	(12,411)
Fair value of plan assets	13,814	12,870
	1,459	**459**

The plan assets consist of an annuity insurance policy. The annuity portfolio is made up of a growth account and a guaranteed account. Increases are guaranteed at a minimum of CPI per annum. Funds are transferred from the growth account to the guaranteed account annually to fund any increase in employer contributions in excess of the guaranteed annuities.

Changes in the present value of the defined benefit obligation are as follows:

	2016 R'000	2015 R'000
Opening balance	(459)	236
Employer prefunding contributions	(1,000)	(736)
Net expense recognised in the statement of financial performance	-	41
	(1,459)	**(459)**

Net expense recognised in the statement of financial performance

	2016 R'000	2015 R'000
Current service cost	20	19
Interest cost	1,094	1,094
Expected return on plan assets	(1,114)	(1,072)
	-	**41**

Calculation of actuarial gains and losses

Changes in the fair value of plan assets are as follows:

	2016 R'000	2015 R'000
Opening balance	12,870	12,127
Expected return	1,114	1,073
Contributions by employer	1,000	736
Benefits paid	(1,170)	(1,066)
	13,814	**12,870**

Key assumptions used

Assumptions used at the reporting date:

	2016 (%)	2015 (%)
Discount rates used	9.25%	9.25%
Expected rate of return on assets	9.25%	9.25%
Consumer Price Inflation (CPI)	6.50%	6.50%
Net discount rate – Next 5 years	(0.46)%	(0.46)%
Net discount rate – After 5 years	1.39%	1.39%
Health care cost inflation – Next 5 years	9.75%	9.75%
Health care cost inflation – After 5 years	7.75%	7.75%
Normal retirement age	65 years	65 years

Other assumptions

Amounts for the current and previous four years are as follows:

	2016 R'000	2015 R'000	2014 R'000	2013 R'000	2012 R'000
Defined benefit obligation	(12,355)	(12,411)	(12,363)	(13,307)	(11,741)
Plan assets	13,814	12,870	12,127	10,634	11,924
Surplus/(deficit)	1,459	459	(236)	(2,673)	183

Defined contribution plan

It is the policy of the entity to provide retirement benefits to all its employees through the National Research Foundation Pension Fund, subject to the Pensions Fund Act. The fund is administered by Alexander Forbes Consultants and Actuaries.

The entity is under no obligation to cover any unfunded benefits.

	2016 R'000	2015 R'000
The amount recognised as an expense for defined contribution plans is	43,868	39,577

9. Prepayments

Prepayments represent a net advance payment made to the contractor awarded the contract for the construction of the MeerKAT antennas for the SKA project. The balance of the prepayment is amortised, based on milestones achieved over the period of the contract by the service provider.

	2016 R'000	2015 R'000
Advance payment on MeerKAT antennas	34,916	63,192

10. Grants and bursaries paid in advance

	2016 R'000	2015 R'000
Grant advances	392,677	424,631

11. Inventories

	2016 R'000	2015 R'000
Consumable stores and maintenance spares	5,418	4,891
Restaurant stock	762	925
	6,180	**5,816**

12. Receivables from exchange transactions

	2016 R'000	2015 R'000
Trade debtors	187,299	34,471
Employee costs in advance	184	148
Prepayments	141,219	116,711
Deposits	3,609	3,632
Designated income and other receivables	113,326	107,887
	445,637	**262,849**

Credit quality of trade and other receivables

Credit risk, with respect to trade and other receivables, is limited due to the large number of customers comprising the NRF's customer base, and their dispersion across different industries and geographical areas.

Trade receivables

None of the financial assets that are fully performing have been renegotiated in the last year.

Fair value of trade and other receivables

The fair value of financial assets is not expected to differ materially from their carrying values, due to the short-term nature thereof.

Trade and other receivables past due but not impaired

Trade and other receivables, which are generally less than three months past due, are not considered to be impaired. At 31 March 2016, R 8,002m (2015: R 3,890m) was past due, but not impaired.

The ageing of amounts past due, but not impaired, is as follows:

	2016 R'000	2015 R'000
1 month past due	1,980	5
2 months past due	52	33
3 months past due	5,970	3,852

Trade and other receivables impaired

As of 31 March 2016, trade and other receivables of R 664K (2015: R 867K) were impaired and provided for. The amount of the provision was R 664K as of 31 March 2016 (2015: R 867K).

Reconciliation of provision for impairment of trade and other receivables

	2016 R'000	2015 R'000
Opening balance	867	985
Provision for impairment	58	191
Amounts written off as uncollectible	(20)	(36)
Unused amounts reversed	(241)	(273)
	664	**867**

The creation and release of the provision for impaired receivables were included in operating expenses in surplus or deficit (note 28). Amounts charged to the allowance account are generally written off when there is no expectation of recovering additional cash.

The maximum exposure to credit risk at the reporting date is the fair value of each class of receivable mentioned above. The entity does not hold any collateral as security.

13. Cash and cash equivalents

Cash and cash equivalents consist of:

	2016 R'000	2015 R'000
Cash on hand	315	334
Bank balances	40,240	113,054
Short-term deposits	630,920	591,170
	671,475	**704,558**

These monies relate primarily to designated income received in advance for the SKA project.

Credit quality of cash at bank and short-term deposits, excluding cash on hand

Cash equivalents, and short-term deposits, are placed with highly rated and National Treasury-approved financial institutions.

14. Capital fund

	Note(s)	2016 R'000	2015 R'000
Opening balance		1,364,477	1,126,398
Net acquisition of assets		345,205	238,079
Acquisition of property, equipment and intangible assets	3&4	440,143	322,576
Other transfers		-	80
Depreciation, amortisation and disposals	3&4	(94,938)	(84,577)
		1,709,682	**1,364,477**

15. SALT Fund

The SALT Fund represents income received from the Department of Science and Technology for the purpose of investing the funds in the SALT Foundation (Pty) Ltd. The balance is adjusted with post-acquisition surpluses/losses of the SALT Foundation (Pty) Ltd. Refer note 6.

	2016 R'000	2015 R'000
Available income for the SALT Foundation (Pty) Ltd.	22,795	25,763

16. Finance lease obligation

	2016 R'000	2015 R'000
Minimum lease payments due		
- within one year	189	534
- in second to fifth year inclusive	50	167
	239	701
less: future finance charges	(19)	(52)
Present value of minimum lease payments	**220**	**649**
Present value of minimum lease payments due		
- within one year	173	492
- in second to fifth year inclusive	47	157
	220	**649**
Non-current liabilities	47	157
Current liabilities	173	492
	220	**649**

Certain office equipment is leased under finance leases. The average lease term was two to five years and the average effective borrowing rate was 14% (2015: 11%). The entity's obligations under finance leases are secured by the lessor's charge over the leased assets. Refer note 3.

Market risk

The fair value of finance lease liabilities approximates their carrying amounts.

17. Provisions

Reconciliation of provisions – 2016

	2016				
	Opening balance	Additions	Utilised during the year	Reversed during the year	Total
Provision for performance bonus	8,373	18,095	(6,024)	(2,349)	18,095

Reconciliation of provisions – 2015

	2015			
	Opening balance	Additions	Utilised during the year	Total
Provision for performance bonus	3,000	8,373	(3,000)	8,373

The provision represents an estimated amount to be paid for performance bonuses. The process of finalising performance reviews for the current year will be concluded in the next financial year, when the actual payments and the determination thereof will occur.

18. Designated income received in advance

Funding that is earmarked for a specific purpose, and thus conditional, relating to expenditure that will be incurred in future financial years, is transferred to income received in advance until the related costs are incurred.

	2016 R'000	2015 R'000
Conditional income not yet expensed	1,972,022	1,840,779

19. Payables from exchange transactions

	2016 R'000	2015 R'000
Trade payables	44,032	66,921
Accrued leave pay	50,222	45,752
Remuneration accrual	4,909	4,489
Other payables	4,565	3,002
	103,728	**120,164**

20. Sale of goods and services

	2016 R'000	2015 R'000
Sale of isotopes	52,047	52,373
Services rendered	4,640	4,550
National Zoological Gardens sales	14,584	13,998
Other sales	866	778
	72,137	**71,699**

21. Other income

	2016 R'000	2015 R'000
Sundry income	9,851	5,791
Rent received	2,744	2,888
Donations received	361	42
Participation fees	484	3,151
	13,440	**11,872**

22. Interest income

	2016 R'000	2015 R'000
Bank	101,475	59,973
Interest charged on trade and other receivables	48	23
Interest received – other	5	4
	101,528	**60,000**

23. Ring-fenced income

	2016 R'000	2015 R'000
Ring-fenced funding received	1,891,520	1,427,444
Ring-fenced funds carried forward to 2016/17	(155,833)	(709,974)
	1,735,687	**717,470**

24. Designated income

	2016 R'000	2015 R'000
Department of Science and Technology	857,734	962,835
Other government organisations	364,137	325,938
Other	84,117	63,347
	1,305,988	**1,352,120**

The NRF manages a number of projects/programmes for government departments as well as local and international organisations on a contractual basis. These funds are designated for specific projects.

25. Board and Corporate Executive members' remuneration

Non-Executive Members (Board members)	Short-term benefits R'000	Total package 2016 R'000	Total package 2015 R'000
Prof. RM Crewe (Chairperson up to 30 September 2014)	-	-	43
Dr PG Clayton (From 1 October 2011)	78	78	52
Advocate L Zondo (From 1 October 2014)	64	64	16
Prof. B Cousins (Up to 30 September 2014)	-	-	26
Dr NM Magau (Up to 30 September 2014)	-	-	36
Ms J Yawitch (From 1 September 2014)	50	50	13
Ms M Letlape (From 1 March 2015)	31	31	-
Dr V Papu-Zamxaka (From 1 October 2014)	60	60	10
Prof. MV Leibbrandt (From 1 October 2011)	65	65	29
Prof. PP Lolwana (Up to 30 September 2014)	-	-	26
Mr MR Lubisi (From 1 October 2014)	70	70	16
Prof. R Singh (From 1 October 2011)	60	60	26
Prof. T Maluleke (From 1 October 2014)	35	35	13
Prof. L Nongxa (Chairperson from 1 October 2014)	127	127	22
Ms GM Campbell (From 1 October 2014)	51	51	-
Prof. SD Maharaj (From 1 October 2011)	70	70	36
Prof. EM Tyobeka (From 1 October 2011)	79	79	42
	840	**840**	**406**

Members of the Corporate Executive	Short-term benefits R'000	Bonuses and performance related payments R'000	Retirement fund contributions R'000	Medical contributions R'000	Other benefits	Total package 2016 R'000	Total package 2015 R'000
* Dr AS van Jaarsveld (CEO of the NRF up to January 2015)	-	-	-	-	-	-	2,814
* Dr M Qhobela (CEO of the NRF from January 2016)	511	-	103	26	12	652	-
Dr BA Damonse (Acting CEO of the NRF up to December 2015)	1,593	145	214	30	294	2,276	1,882
Dr D Pillay	1,961	-	321	-	43	2,325	2,296
Prof. N Chetty (on part-time contract)	994	-	-	-	15	1,009	817
Mr B Singh	1,803	167	264	43	38	2,315	2,223
Mr PB Thompson	1,756	167	346	-	46	2,315	2,169
	8,618	**479**	**1,248**	**99**	**448**	**10,892**	**12,201**
Total remuneration	**9,458**	**479**	**1,248**	**99**	**448**	**11,732**	**12,607**

* Denotes ex-officio member of the NRF Board.

Corporate Executive members are considered to be key management personnel as they are the delegated key decision-makers.

26. Finance costs

	2016 R'000	2015 R'000
Finance leases	50	99
Other interest paid	91	275
	141	**374**

27. Auditors' remuneration

	2016 R'000	2015 R'000
Current year audit	893	228
Prior year audit	4,067	2,366
Other services	109	124
	5,069	**2,718**

28. Operating surplus

Operating surplus for the year is stated after accounting for the following:

	2016 R'000	2015 R'000
Operating lease charges		
Premises		
- Contractual amounts	11,393	10,759
Equipment		
- Contractual amounts	33	-
	11,426	**10,759**
Loss/(gain) on sale of property, plant and equipment	784	2,621
Loss on exchange differences	3,547	1,872
Amortisation on intangible assets	7,366	5,735
Depreciation on property, plant and equipment	83,488	75,548
Employee costs	577,904	532,170
Cost of sales – Isotopes	25,223	15,496
Cost of sales – Other	7,112	6,250
Defined contribution plan	43,868	39,577

29. Cash generated from operations

	2016 R'000	2015 R'000
Surplus	363,169	264,407
Adjustments for:		
Depreciation and amortisation	93,274	81,279
Gain/(loss) on sale of assets and liabilities	784	2,621
Income from equity accounted investments	2,967	4,152
Movements in retirement benefit assets and liabilities	(1,000)	(695)
Movements in provisions	9,722	5,373
Changes in working capital:		
Inventories	(364)	(1,017)
Receivables from exchange transactions	(182,788)	(193,386)
Prepayments	28,276	83,357
Grants and bursaries paid in advance	(22,241)	(212,431)
Payables from exchange transactions	(16,436)	8,352
Designated income received in advance	131,243	559,759
	406,606	**601,771**

30. Financial instruments disclosure

Categories of financial instruments

	2016	
	At amortised cost	Total
Financial assets		
Trade and other receivables from exchange transactions	300,625	300,625
Cash and cash equivalents	671,475	671,475
Other financial assets	627,150	627,150
	1,599,250	**1,599,250**
Financial liabilities		
Trade and other payables from exchange transactions	48,597	48,597
Finance leases	220	220
	48,817	**48,817**

	2015	
	At amortised cost	Total
Financial assets		
Trade and other receivables from exchange transactions	142,358	142,358
Cash and cash equivalents	704,558	704,558
Other financial assets	572,954	572,954
	1,419,870	**1,419,870**
Financial liabilities		
Trade and other payables from exchange transactions	69,923	69,923
Finance leases	649	649
	70,572	**70,572**

31. Commitments

	2016 R'000	2015 R'000
Authorised capital expenditure		
Already contracted for, but not provided for		
- Property, plant and equipment	717,070	870,093
Not yet contracted for, and authorised by delegated authority		
- Property, plant and equipment	20,538	18,774
Total capital commitments		
Already contracted for, but not provided for	717,070	870,093
Not yet contracted for and authorised by delegated authority	20,538	18,774
	737,608	**888,867**
Authorised operational expenditure		
Already contracted for, but not provided for		
- Mainly technical services	70,715	66,496
Not yet contracted for and authorised by delegated authority		
- Various operational expenditure	282	-
Total operational commitments		
Already contracted for, but not provided for	70,715	66,496
Not yet contracted for and authorised by delegated authority	282	-
	70,997	**66,496**
Total commitments		
Authorised capital expenditure	737,608	888,867
Authorised operational expenditure	70,997	66,496
	808,605	**955,363**

The operational and capital expenditure will be financed from Medium Term Estimate Funding (MTEF), designated funds and the accumulated surplus.

Operating leases – as lessee (expense)

	2016 R'000	2015 R'000
Minimum lease payments due		
- within one year	11,689	10,264
- in second to fifth year inclusive	2,000	12,469
	13,689	**22,733**

Operating lease payments represent rentals payable by the entity mainly for office properties and equipment. Leases are negotiated for a term of between one year and 100 years and rentals escalate between 0% and 10% annually. No contingent rent is payable.

Operating leases – as lessor (income)

	2016 R'000	2015 R'000
Minimum lease payments due		
- within one year	612	366
- in second to fifth year inclusive	355	304
	967	**670**

The entity has entered into non-cancellable commercial property leases for the duration of the lease period. These leases are negotiated for a term of between one year and 10 years and rentals escalate between 5% and 10% annually. There are no contingent rents receivable.

32. Contingencies

	2016 R'000	2015 R'000
Contingent liabilities		
Future grants awarded	4,764,039	4,552,010

The NRF has awarded multi-year grants for up to five years, with subsequent years' payments conditional upon receipt of progress reports.

33. Related parties

Relationships	
Members of key management	Refer to note 25
Controlling entity	Department of Science and Technology
Associates	Refer to note 6
Fellow-controlled entities	Academy of Science of South Africa (ASSAf), Council for Scientific and Industrial Research (CSIR), Human Sciences Research Council (HSRC), South African National Space Agency (SANSA) and Technology Innovation Agency (TIA)

By virtue of the fact that the NRF is a national public entity, and controlled by national government, any other controlled entity of the national government is a related party. All transactions with such entities are at arm's length and on normal commercial terms.

Related party balances

	2016 R'000	2015 R'000
Amounts included in Trade receivables/(Trade payables) regarding related parties		
SALT Foundation (Pty) Ltd.	3,733	4,261
Prepayment to SALT Foundation (Pty) Ltd.	13,582	22,284

The outstanding balance at year-end is unsecured, interest free and settlement occurs in cash. No guarantees have been received. No impairment has been recorded of the amount owed.

Related party transactions

	2016 R'000	2015 R'000
Payments to the SALT Foundation (Pty) Ltd.		
Levy for the use of the telescopes	11,784	11,630
Receipts from the SALT Foundation (Pty) Ltd.		
The recovery of monthly services	24,749	25,264
Contract work/services performed by the SAAO business unit	16	306
Department of Science and Technology		
Parliamentary grant and ring-fenced funding received	2,769,919	2,278,730
Designated income	857,734	962,835

34. Change in estimate

Property, plant and equipment

A change in the depreciation estimate, due to a change in the residual values and useful lives of certain assets, had an impact of R 0,9m decrease for the current and future periods.

35. Prior period errors

Higher education institutions were charged membership fees in 2014/15 regarding their contribution to the Research Information Management System. These invoices should not have been raised at the time, as an agreement for such contributions had not been finalised yet. Invoices to the value of R 5,4m have been reversed, pending the outcome of discussions and a formal agreement amongst the parties involved.

The SKA project is in the process of upgrading an 80-kilometre provincial access gravel road. Costs incurred in 2014/15 amount to R 3,468m. This cost was recorded as capital work-in-progress and should have been expensed as the SKA project does not have control over the provincial road.

The SKA project is involved in the establishment of an African network of VLBI-capable radio telescopes by converting redundant satellite telecommunications antennas into VLBI-capable radio telescopes in African countries. The cost of such conversions was recorded as capital work-in-progress and should have been expensed as the SKA project does not have control over such assets. Total cost incurred up to 2014/15 amounted to R 7,24m.

The correction of the errors results in adjustments of comparative figures as follows:

Statement of financial position	2015 R'000
Trade debtors decreased	5,393
Capital work-in-progress decreased	3,468
Capital work-in-progress decreased	3,847
Accumulated surplus increased	3,468
Capital fund decreased	3,468
Opening work-in-progress decreased	3,393
Opening Capital fund decreased	3,393
Accumulated surplus increased	3,847
Capital fund decreased	3,847
Statement of financial performance	
Other income – Participation fees decreased	5,393
Maintenance expenditure increased	3,468
Sundry expenditure increased	3,847

36. Risk management

Financial risk management

The entity's activities expose it to a variety of financial risks: market risk (including currency risk and cash flow interest rate risk), credit risk and liquidity risk.

The entity's overall risk management programme focuses on the unpredictability of financial markets and seeks to minimise potential adverse effects on the entity's financial performance. Risk management is carried out by a central treasury department under policies approved by the Board. Entity treasury identifies, evaluates and hedges financial risks in close co-operation with the entity's business units. The Board provides written principles for overall risk management, as well as written policies covering specific areas such as foreign exchange risk, interest rate risk, credit risk and investment of excess liquidity.

Liquidity risk

Prudent liquidity risk management implies maintaining sufficient cash and the availability of funding. The entity's risk to liquidity is a result of the funds available to cover future commitments. The entity manages liquidity risk through an ongoing review of future commitments, through proper management of working capital, capital expenditure and actual vs forecasted cash flows and its investment policy. Adequate reserves and liquid resources are also maintained.

The table below analyses the entity's financial liabilities into relevant maturity groupings based on the remaining period at the statement of financial position to the contractual maturity date. The amounts disclosed in the table are the contractual undiscounted cash flows. Balances due within 12 months equal their carrying balances as the impact of discounting is not significant.

	2016	
	Less than 1 year	Between 1 and 2 years
At 31 March 2016		
Trade and other payables	48,597	-
Finance leases	189	50

	2015	
	Less than 1 year	Between 1 and 2 years
At 31 March 2015		
Trade and other payables	69,923	-
Finance leases	534	167

Credit risk

Credit risk arises from the risk that a counter-party may default or not meet its obligations timeously. The entity is exposed to risk from its operating and financing activities. Credit risk consists mainly of cash deposits, cash equivalents and trade debtors. The entity only deposits cash with major banks with high-quality credit standing and limits exposure to any one counter-party.

Trade receivables comprise a widespread customer base. Management evaluates credit risk relating to customers on an ongoing basis. Risk control assesses the credit quality of the customer, taking into account its financial position, past experience and other factors. The entity has no significant concentration of credit risk. The carrying amounts of the financial assets included in the statement of financial position represent the entity's maximum exposure to credit risk in relation to these assets. The entity does not have any significant exposure to any individual customer or counter-party.

Market risk

Interest rate risk

Interest rate risk results from the cash flow and financial performance uncertainty arising from interest rate fluctuations. Financial assets and liabilities affected by interest rate fluctuations include bank and cash deposits.

Interest rate exposure and investment strategies are evaluated by management on a regular basis. Interest-bearing investments are held with reputable banks in order to minimise exposure. The entity furthermore manages its interest rate risk by obtaining competitive rates from different banks. No significant risks have been identified with regard to interest rates.

Cash flow interest rate risk

Financial instrument	Current interest rate	Due in less than a year R'000	Due in one to two years R'000
Trade and other receivables – normal credit terms	8.04%	187,299	-
Other receivables – normal credit terms	-	113,326	-
Cash in current banking institutions	5.50%	40,240	-
Short-term deposits	7.21%	630,920	-
Trade and other payables	-	48,597	-
Other financial assets	-	627,150	-
Finance leases	14.00%	173	47

Foreign exchange risk

The entity does not hedge foreign exchange fluctuations.

Foreign exchange risk arises on financial instruments that are denominated in a foreign currency, i.e. in a currency other than the functional currency in which they are measured. There were no foreign currency transactions covered by forward exchange contracts at the end of the year. The entity transacts with foreign entities on a minimal basis and therefore the balance on foreign exchange debtors and creditors is considered immaterial and therefore within the residual risk limits.

37. Fruitless and wasteful expenditure

	2016 R'000	2015 R'000
Opening balance	-	93
Cancellation and adjustment fees	44	-
Other minor expenditure	-	14
Condoned or written off by the NRF	(44)	(107)
	-	-

Each of these has been investigated and disciplinary steps have been taken, where applicable. Steps taken include strengthening of internal controls and staff counselling.

38. Losses due to criminal conduct

	2016 R'000	2015 R'000
External syndicate-related fraud	2,615	-

A criminal investigation relating to the loss incurred is in progress. In addition, recovery of the loss is being pursued with the bank involved.

39. Irregular expenditure

	2016 R'000	2015 R'000
Opening balance	25,502	18,579
Add: Irregular expenditure – current year and prior years identified in current year	6,569	22,064
Less: Amounts condoned	(24,491)	(15,141)
	7,580	**25,502**

Analysis of expenditure awaiting condonation per age classification

	2016 R'000	2015 R'000
Current year	6,450	19,937
Prior years – Awaiting condonement from National Treasury	-	4,977
Prior years – To be condoned by internal delegated authority	365	-
Prior years – To be condoned by Corporate Executive	765	588
	7,580	**25,502**

Details of irregular expenditure – current year

Non-compliance to practice note 6 of 2007/2008 and Treasury Regulation 16A6.1	121
Non-compliance to Treasury Regulation 16A.6.1 and practice note 8 of 2007/2008	298
Non-compliance to practice note 6 of 2007/2008 and Treasury Regulation 16A6.4	705
Non-compliance to Treasury Regulation 16A3.2	4,876
Non-compliance to Treasury Regulation 16A3.2 and the Preferential Procurement Policy Framework Act No. 5 of 2000	72
Non-compliance to the Preferential Procurement Regulations 2011	497
	6,569

Details of irregular expenditure condoned	Condoned by (condoning authority)	
Tax clearance certificate requirements not condoned by National Treasury, subsequently written off by Accounting Authority	Corporate Executive	4,142
Tax clearance certificate requirements, advertisement requirements and non-compliance to supply chain management prescripts	National Treasury	11,274
Non-compliance to Treasury Regulations 16A6.1 – Non-compliance to thresholds	Corporate Executive	588
Procurement-related transgressions for 2014/15 and 2015/16	Internal delegated authority	8,487
		24,491

40. Segment information

General information

Identification of segments

The entity is organised and reports to management on the basis of nine business units of the entity. The segments were organised around the type of service delivered. Management uses these same segments for determining strategic objectives. Information reported about these segments is used by management as a basis for evaluating the segments' performance and for making decisions about the allocation of resources. The disclosure of information about these segments is also considered appropriate for external reporting purposes.

The Corporate office is regarded as an administrative department, which do not generate economic benefits or have service potential. It has subsequently been disclosed as a reconciling item to the entity surplus/deficit.

Types of goods and/or services by segment

These reportable segments as well as the goods and/or services for each segment are set out below:

Reportable segment	Goods and/or services
Research and Innovation Support and Advancement (RISA)	Provides for the promotion and support of research and research capacity development in all fields of knowledge and technology, through investing in knowledge, people and infrastructure; developing research capacity, and advancing equity and equality, to unlock the full creative potential of researchers; assisting with the development of institutional capacity; and, facilitating strategic national and international partnerships and knowledge networks.
iThemba Laboratory for Accelerator Based Sciences (iThemba LABS)	Provides advanced, viable, multidisciplinary facilities for training, research and services in the fields of sub-atomic nuclear science and applied radiation medicine.
South African Astronomical Observatory (SAAO)	Performs fundamental research in astronomy and astrophysics at a national and international level. It is the national research facility for optical and infrared astronomy in South Africa. It is also responsible for managing the operations of the Southern African Large Telescope (SALT).
Hartebeesthoek Radio Astronomy Observatory (HartRAO)	This facility was established for radio astronomy research in South Africa. Its primary function is the support of research and training in radio astronomy and space geodesy.
South African Institute for Aquatic Biodiversity (SAIAB)	This facility serves as a research hub for aquatic biodiversity in southern Africa by housing and developing the National Fish Collection and associated resource collections as research tools and sources of aquatic biodiversity data. It also generates knowledge on aquatic biodiversity through interactive and collaborative scientific research, and disseminates scientific knowledge at all levels.
South African Agency for Science and Technology Advancement (SAASTA)	SAASTA is positioned as a science engagement agency in advancing public awareness, appreciation and understanding of science, engineering and technology in South Africa, as well as the integration of science awareness activities across the entity.
National Zoological Gardens of South Africa (NZG)	The NZG is a national facility and an active participant in terrestrial biodiversity research.
South African Environmental Observation Network (SAEON)	A research unit that establishes and maintains nodes (environmental observatories, field stations or sites) linked by an information management network to serve as research and education platforms for long-term studies of ecosystems that will provide for incremental advances in our understanding of ecosystems and our ability to detect, predict and react to environmental change.
South African Square Kilometre Array (SKA SA)	The South African SKA pathfinder project includes the construction of the KAT7 prototype telescope array and the MeerKAT radio telescope in the Karoo. Once operating, MeerKAT will be the largest radio telescope in the world for many years.

Segment surplus or deficit, assets and liabilities – 2016

	2016										
	RISA R'000	iThemba LABS R'000	SAAO R'000	HartRAO R'000	SAEON R'000	SKA R'000	SAIAB R'000	SAASTA R'000	NZG R'000	Inter-segment transfers & Corporate office R'000	Total R'000
Revenue											
Parliamentary grant	461,178	147,191	46,889	24,667	10,574	-	16,578	21,319	59,728	-	788,124
Ring-fenced income	1,117,074	-	1,500	-	16,761	557,796	-	-	-	-	1,693,131
Designated income	1,115,599	22,567	31,188	3,508	7,972	28,008	18,329	73,775	6,195	-	1,307,141
Revenue from exchange transactions	539	78,939	3,452	883	633	245	176	851	54,370	-	140,088
Inter-segment transfers	42,212	36,386	40,252	6,019	17,400	272	8,390	29,543	8,468	(188,942)	-
Interest revenue	1,071	4	-	-	-	41,414	1	-	-	-	42,490
Total segment revenue	**2,737,673**	**285,087**	**123,281**	**35,077**	**53,340**	**627,735**	**43,474**	**125,488**	**128,761**	**(188,942)**	**3,970,974**
Corporate office revenue										216,690	216,690
Corporate inter-segment transfers										(25,072)	(25,072)
Total revenue reconciling items										**191,618**	**191,618**
Entity's revenue	**2,737,673**	**285,087**	**123,281**	**35,077**	**53,340**	**627,735**	**43,474**	**125,488**	**128,761**	**2,676**	**4,162,592**

	2016										
	RISA R'000	iThemba LABS R'000	SAAO R'000	HartRAO R'000	SAEON R'000	SKA R'000	SAIAB R'000	SAASTA R'000	NZG R'000	Inter-segment transfers & Corporate office R'000	Total R'000
Expenditure											
Salaries and wages	96,406	116,488	58,956	17,598	27,150	100,523	17,975	23,627	73,818	-	532,541
Grants, bursaries and other research expenditure	2,463,105	4,165	1,679	653	1,702	48,975	3,424	32,235	-	-	2,555,938
Programme and operating expenditure	89,008	119,247	47,985	13,762	19,615	238,654	11,728	41,845	49,151	-	630,995
Inter-segment transfers	96,748	19,493	1,973	970	255	8,245	464	26,828	2,125	(157,101)	-
Total segment expenditure	**2,745,267**	**259,393**	**110,593**	**32,983**	**48,722**	**396,397**	**33,591**	**124,535**	**125,094**	**(157,101)**	**3,719,474**
Total segmental surplus/(deficit)	**(7,594)**	**25,694**	**12,688**	**2,094**	**4,618**	**231,338**	**9,883**	**953**	**3,667**	**(31,841)**	**251,500**
Total revenue reconciling items										191,618	191,618
Corporate office expenditure										(136,863)	(136,863)
Corporate inter-segment transfers										56,914	56,914
Entity's surplus/(deficit) for the period	**(7,594)**	**25,694**	**12,688**	**2,094**	**4,618**	**231,338**	**9,883**	**953**	**3,667**	**79,828**	**363,169**
Opening segment accumulated surplus/(deficit)	(16,844)	25,665	(266)	761	(1,179)	-	1,636	147	(2,490)	(4,893)	2,537
Transfer from SALT fund	-	-	2,968	-	-	-	-	-	-	-	2,968
Transfer to infrastructure fund	-	(19,359)	-	-	-	-	-	-	-	-	(19,359)
Segment net capital expenditure	(2,795)	(44,335)	(18,704)	(6,671)	(9,002)	(272,438)	(13,438)	(2,638)	(3,287)	-	(373,308)
Depreciation and amortisation	11,767	20,857	4,967	4,491	2,674	41,100	3,589	1,564	2,267	-	93,276
Corporate office net capital expenditure	-	-	-	-	-	-	-	-	-	(65,173)	(65,173)
Accumulated Surplus/(Deficit)	**(15,466)**	**8,522**	**1,653**	**675**	**(2,889)**	**-**	**1,670**	**26**	**157**	**9,762**	**4,110**
Assets											
Segment assets	1,579,348	190,297	79,733	56,968	26,905	1,883,806	41,790	32,722	20,400	-	3,911,969
Total assets as per Statement of Financial Position											**3,911,969**
Liabilities											
Segment liabilities	1,333,457	8,175	3,303	12,048	7,713	713,155	(811)	9,943	7,082	-	2,094,065
Total liabilities as per Statement of Financial Position											**2,094,065**

Segment assets and liabilities for the RISA segment include Corporate office assets and liabilities as these are not separately identified or internally reported.

	2015										
	RISA R'000	iThemba LABS R'000	SAAO R'000	HartRAO R'000	SAEON R'000	SKA R'000	SAIAB R'000	SAASTA R'000	NZG R'000	Inter-segment transfers & Corporate office R'000	Total R'000
Revenue											
Parliamentary grant	440,539	146,961	44,403	23,359	9,441	-	15,699	20,188	56,560	-	757,150
Ring-fenced income	464,597	-	-	-	13,582	218,653	-	-	7,500	-	704,332
Designated income	1,005,790	15,343	32,446	873	4,601	216,142	10,633	61,647	3,123	-	1,350,598
Revenue from exchange transactions	4,005	56,134	2,943	136	217	447	184	728	50,337	-	115,131
Inter-segment transfers	89,854	14,862	26,863	4,346	14,399	2,874	15,390	19,640	8,972	(197,200)	-
Interest revenue	19	3	-	-	-	29,661	1	-	-	-	29,684
Total segment revenue	**2,004,804**	**233,303**	**106,655**	**28,714**	**42,240**	**467,777**	**41,907**	**102,203**	**126,492**	**(197,200)**	**2,956,895**
Corporate office revenue										178,943	178,943
Corporate inter-segment transfers										(38,175)	(38,175)
Total revenue reconciling items										**140,768**	**140,768**
Entity's revenue	**2,004,804**	**233,303**	**106,655**	**28,714**	**42,240**	**467,777**	**41,907**	**102,203**	**126,492**	**(56,432)**	**3,097,663**

	2015										
	RISA R'000	iThemba LABS R'000	SAAO R'000	HartRAO R'000	SAEON R'000	SKA R'000	SAIAB R'000	SAASTA R'000	NZG R'000	Inter-segment transfers & Corporate office R'000	Total R'000
Expenditure											
Salaries and wages	92,283	121,885	58,291	16,513	22,647	75,885	17,540	21,541	70,986	-	497,571
Grants, bursaries and other research expenditure	1,713,537	1,971	1,633	592	1,077	39,830	2,087	27,694	-	-	1,788,421
Programme and operating expenditure	72,419	95,383	35,819	12,589	12,028	140,753	16,788	36,527	53,136	-	475,442
Inter-segment transfers	142,843	7,301	1,963	941	335	8,080	2,375	16,654	1,902	(182,394)	-
Total segment expenditure	**2,021,082**	**226,540**	**97,706**	**30,635**	**36,087**	**264,548**	**38,790**	**102,416**	**126,024**	**(182,394)**	**2,761,434**
Total segmental surplus/(deficit)	**(16,278)**	**6,763**	**8,949**	**(1,921)**	**6,153**	**203,229**	**3,117**	**(213)**	**468**	**(14,806)**	**195,461**
Total revenue reconciling items										140,768	140,768
Corporate office expenditure										(124,868)	(124,868)
Corporate inter-segment transfers										53,046	53,046
Entity's surplus/(deficit) for the period	**(16,278)**	**6,763**	**8,949**	**(1,921)**	**6,153**	**203,229**	**3,117**	**(213)**	**468**	**54,140**	**264,407**
Opening segment accumulated surplus/(deficit)	5,484	9,348	(355)	1,640	152	-	207	(497)	(584)	(11,032)	4,363
Transfer from SALT fund	-	-	4,152	-	-	-	-	-	-	-	4,152
Transfer to infrastructure fund	-	-	-	-	-	-	-	-	-	(32,306)	(32,306)
Segment net capital expenditure	(15,518)	(9,940)	(17,125)	(2,850)	(9,204)	(239,149)	(4,776)	(471)	(4,635)	-	(303,668)
Depreciation and amortisation	9,468	19,494	4,113	3,892	1,720	35,920	3,088	1,328	2,261	-	81,284
Corporate office net capital expenditure	-	-	-	-	-	-	-	-	-	(15,695)	(15,695)
Accumulated Surplus/(Deficit)	**(16,844)**	**25,665**	**(266)**	**761**	**(1,179)**	**-**	**1,636**	**147**	**(2,490)**	**(4,893)**	**2,537**
Assets											
Segment assets	1,527,939	161,683	66,772	43,047	16,749	1,522,967	31,707	35,247	18,589	-	3,424,700
Total assets as per Statement of Financial Position											**3,424,700**
Liabilities											
Segment liabilities	1,351,332	5,254	5,997	222	2,261	583,655	(1,097)	13,402	8,939	-	1,969,965
Total liabilities as per Statement of Financial Position											**1,969,965**

Segment assets and liabilities for the RISA segment include Corporate office assets and liabilities as these are not separately identified or internally reported.

Measurement of segment surplus or deficit, assets and liabilities

Basis of accounting for transactions between reportable segments
The accounting policies of the segments are the same as those described in the summary of significant accounting policies.

The nature of differences between the measurements of the reportable segments' surplus or deficit and the entity's surplus or deficit and discontinued operations
Inter-segment transfers: segment revenue and segment expense include revenue and expense arising from transfers between segments. Such transfers are eliminated on consolidation.

The Corporate office is regarded as an administrative department and is a reconciling item to the entity's surplus/deficit.

The nature of differences between the measurements of the reportable segments' assets or liabilities and the entity's assets or liabilities
There are no differences between the measurements of the reportable segments' assets or liabilities in comparison with that of the entity.

Information about geographical areas
The entity's operations are in different regions around the country. However, geographical areas are not used by the entity for decision-making purposes and information is not reported or collected in such a manner.

41. Budget differences

Material differences between budget and actual amounts

The budget is prepared well in advance of the financial year. Significant differences can occur between the budget and the actual results. The entity normally receives additional designated income during the financial year and funds carried forward are only confirmed at year-end, thus subsequent to the preparation of the budget.

Income

The increase in the **insurance claim received** is due to an insurance recovery for the fire-damaged equipment at iThemba LABS, which was not included in this year's budget. The money will be spent on replacement equipment in the next financial year. The decrease in the **ring-fenced income** is due to unspent funds on the SKA project carried forward to 2016/17 on account of slower production roll-out of the MeerKAT dishes, delays in the roll-out of the AVN project, as well as slow progress on the acquisition of land for SKA Phase 1. **Designated income** increased, mainly due to additional income received from the Department of Higher Education and Training (DHET) Scarce Skills fund and the DST National Equipment programme to expand activities. Higher **interest income** is due to the build-up of cash holdings due to the delayed activities on the SKA project, as well as favourable interest rates.

Expenditure

The increase in **grants, bursaries and other research expenditure** is due to increases in bursary funding under the DST Human Capacity Development designated funding and the DHET Scarce Skills funding contracts. The decrease in **employees' remuneration** is due to the capitalisation of a portion of salaries to the development of MeerKAT on the SKA project as well as the deferment of filling vacancies at some business units.

20 KEY PERFORMANCE INDICATOR REPORT

20.1 Key performance indicator report

The following section contains tables on the performance targets set for 2015/16 and the NRF's actual performance against these targets.

Table 48: NRF performance against its strategic goals

OUTCOME: An internationally competitive and transformative research system					2015/16			
INDICATORS		Actual 2013	Actual 2014	Actual 2015	Annual target	Actual	% Variance	Explanation
STRATEGIC OBJECTIVE 1		Promote globally competitive research and innovation						
Investment in HCD pipeline	Next Generation %	62%	64%	63%	62%	67%	7%	The amounts invested (expensed) include funding carried forward from the previous financial year, additional funding received from the DST for HICD programmes and incentive and competitive funding. The amounts exclude investment not expensed during the period.
	Next Generation (Rm)	370	469	623.65	608	815	34%	
	Emerging %	14%	15%	17%	17%	13%	-23%	
	Emerging (Rm)	82	112	166.72	171	160	-6%	
	Established %	25%	21%	21%	21%	20%	-3%	
	Established (Rm)	147	153	205.15	202	249	23%	
Number of NRF-funded researchers from designated groups	Black %	26%	28%	30%	34%	31%	-8%	Transformation indicators were adversely affected by lower student numbers due to: • The integration of THRIP into ***the dti*** and the subsequent uncertainty of THRIP funding during the 2015/16 financial year. Funding was only received in May 2017. No call for new THRIP applicants could therefore be opened during the reporting period. • Honours and BTech bursaries for the 2015 academic year were awarded as Block Grant allocations to institutions. Allocations of Block Grants were made from December 2014 to April 2015 for uptake in the 2015 academic year. Additional Block Grant applications were made in August 2015 after reconciliation of awards not taken up and the resulting available funds. Due to the unrest at universities there was a delay in receiving nominations from the institutions; receiving necessary information from students; and administration of additional awards at the research offices. Going forward, the NRF has initiated earlier calls for all scholarships and bursaries to optimise uptake.
	Black Number	790	1,008	1,235	1,543	1,355	-12%	
	Female %	34%	36%	37%	44%	37%	-15%	
	Female Number	1,044	1,285	1,514	1,997	1,610	-19%	
Number and ratio of post-graduate students funded per designated group	Black %	63%	63%	62%	65%	69%	6%	
	Black Number	5,541	6,110	7,057	9,373	8,980	-4%	
	Female %	52%	53%	53%	56%	54%	-3%	
	Female Number	4,557	5,186	5,976	8,075	7,032	-13%	
Number of post-graduate students funded per level	Master's	3,397	3,704	4,329	5,515	4,853	-12%	The NRF exceeded the target for doctoral students. Additional funding for CPPR (Competitive Funding for Rated Researchers) and uptake of new Chair positions resulted in the support of additional doctoral students.
	Doctoral	2,031	2,265	2,917	2,996	3,181	6%	

OUTCOME: An internationally competitive and transformative research system				2015/16			
INDICATORS	Actual 2013	Actual 2014	Actual 2015	Annual target	Actual	% Variance	Explanation
STRATEGIC OBJECTIVE 1	**Promote globally competitive research and innovation**						
Number of postgraduate students supported by the National Research Facilities	358	374	604	505	569	13%	SAEON supported 25 additional students mainly due to the increase in postdoc supervisory capacity and the ASCA project. The SKA has accepted additional postgraduate projects.
ISI publications at the National Research Facilities	271	305	369	330	414	25%	Several papers which were accepted in 2014 were only published this year due to a lag at the publishing houses.
Number of users of National Research Facilities	1,025	1,096	1,255	1,159	1,360	17%	The increase is due to the higher number of students supported by the National Facilities as well as an increase in the number of external researchers using the facilities at iThemba LABS.
Citation impact of National Research Facility outputs (annual cumulative)	>1	>1	>1	2	1.28	-36%	The target was not achieved. Though any impact rating above 1 indicates global relevance and quality, an impact rating of 2 is exceptional. The facilities continue to deliver on their research mandates and continuously pursue the best citation impact.
STRATEGIC OBJECTIVE 2	**Enhance strategic international engagements**						
Increase in the number of international co-publications	6,080	6,601	7,691*	7,400	8,838	19%	This is a systemic indicator of the increase in the global recognition of the quality of South African research and researchers. *It should be noted that the target was set before the high performance in 2015 was available. This very positive trend will be factored into the target going forward.
Increase in the total grant funding for internationalisation (Rm)	49.49	54.04	84.60	117.28	83.40	-29%	During the 2015/16 financial year no Africa calls were launched. In discussion with the DST and the African bilateral partners, a decision was taken to rather focus on a consolidated approach during 2016/17, with a number of joint research opportunities planned. The approach was also informed by feedback from researcher workshops and technical visits to selected SA universities with Africa bilateral grantholders.

OUTCOME: Leading-edge research and infrastructure platforms				2015/16			
INDICATORS	Actual 2013	Actual 2014	Actual 2015	Annual target	Actual	% Variance	Explanation
STRATEGIC OBJECTIVE 3	**Promote globally competitive research and innovation**						
Number of users of equipment that was funded by the NEP and NNEP programmes	1,651	1,682	1,700	1,800	2,360	31%	During the reporting period the application requirements were refined to ensure that grantholders report on all users, including students and collaborators, which increased the number of users recorded.
Number of publications emanating from the usage of equipment funded by the NEP and NNEP programmes	910	1,546	1,700	2,000	1,105	-45%	The number of publications was adversely affected due to extended procurement processes experienced by grantholders. The delays resulted in key equipment not being ready to support research outputs.
Total infrastructure investment in the National Research Facilities (Rm)	263.88	310.77	332.96	369.10	459.57	25%	The higher capex is due to the rollovers of incomplete infrastructure projects from the previous year. The figure also includes the cost related to the access road between Carnarvon and the SKA site, which was initially budgeted for by the Northern Cape provincial government.

OUTCOME: A vibrant and globally connected national system of innovation				2015/16			
INDICATORS	Actual 2013	Actual 2014	Actual 2015	Annual target	Actual	% Variance	Explanation
STRATEGIC OBJECTIVE 4	**Grow NRF influence, impact and reputation**						
Multimedia coverage items	53	51	89	82	125	52%	The launch of CAPRISA was attended by the Nobel laureate who identified HIV. Her presence generated public and media interest resulting in additional coverage. In addition, the launch events of the women-led SARChI Chairs and the DST-NRF Critical Thought flagship project at UWC attracted media interest, further increased by the attendance of Minister Pandor. The Astronomy town meetings also generated unanticipated coverage due to announcements made at the event.
Customer satisfaction rating (NRF) – GMSA Customer Service	Instrument being developed			Instrument being developed			
STRATEGIC OBJECTIVE 5	**Provide support service**						
Unqualified audit report and number of internal and external audit findings	yes	yes	yes				
Investment in ICT platforms (Rm)	53.23	66.82	60.87	72.23	69.52	-4%	Underspent due to RISA VMware licence renewal payments which have been delayed to the next financial year.
Corporate overheads: calculated as a percentage of total expenditure	2%	2%	2%	<3%	1.4%	53%	The reduced rate of overhead is due to additional MTEF ring-fenced funds for bursaries (R257M) and research (R100m) that have been administered without an increase in the overhead structures.

OUTCOME: A representative research and technical workforce					2015/16			
INDICATORS		Actual 2013	Actual 2014	Actual 2015	Annual target	Actual	% Variance	Explanation
STRATEGIC OBJECTIVE 6		Improve talent management						
Proportion of South Africans from designated groups in senior technical and managerial positions	Black %	43%	44%	44%	46%	45%	-2%	There are still a number of vacancies across the organisation in roles where domain expertise is required, thus resulting in long lead-times to attract designated candidates in scarce-skill categories. The NRF remains committed to achieving its long-term goals and has renewed focus and commitment towards redress and transformation and will continue to work towards the achievement of the targets set in the Employment Equity Plan*.
	Black Number	218	244	250	276	275	0%	
	Female %	32%	31%	31%	34%	32%	-6%	
	Female Number	157	176	179	198	195	-2%	
% staff turnover		9.6%	5.3%	8.9%	6%	10.5%	-75%	In the period under review a total number of 148 terminations occurred and 191 vacancies were filled. The annual staff turnover is 10.5%. This includes the ICSU Regional Office for Africa staff transfer to the Academy of Science of South Africa (ASSAf), retirements and deaths. Controllable staff turnover calculated only on terminations and resignations amounted to 7.1% in real terms.
Number of staff with postgraduate qualifications (Master's and PhD)		376	371	461	385	374	-3%	The variance can be ascribed to vacancies across the organisation in roles where a postgraduate qualification is essential as the desired minimum requirement.
Number of staff in the exchange programme		KPI – data collection in order to trend				3	KPI – data collection in order to trend	
Investment in staff training and professional membership fees (Rm)		9.35	9.13	13.21	12.14	12.66	4%	Overspent is due to the SKA African AVN training with African partner countries that commenced earlier than initially anticipated.

OUTCOME: Scientifically literate and engaged society					2015/16			
INDICATORS		Actual 2013	Actual 2014	Actual 2015	Annual target	Actual	% Variance	Explanation
STRATEGIC OBJECTIVE 7		Entrench science engagement						
Investments in science engagement activities (SAASTA and NFs) (Rm)		55.52	71.65	73.92	86.39	100.78	17%	The NZG adjusted its cost centre classification to reflect investment in science engagement more accurately. The net effect was balanced in the Shared Services cost centre.
Interactions with the public (learners, educators and general public) focusing on science awareness activities (SAASTA)	Number of interactions	10	7	10	10	7	-30%	The variance is due to the programme Public Understanding of Biotechnology being withdrawn by the DST. Two other programmes were reported on under interactions focusing on educator development and learner performance in Mathematics, Technology and Science due to a change in its objectives to focus on learner and educator development and not on science awareness as was historically the case. The programmes are Science Centre Capacity Building (workshops for learners and educators) and the Bloodhound Supersonic Car project (educator workshop).
	Approximate number of public reached	551,408	502,186	972,547	560,000	1,013,716	81%	The variance is due to the unit being able to participate in an additional 16 festivals/ events during the reporting period.
Interactions focusing on educator development and learner performance in Mathematics, Technology and Science	Number of interactions	7	8	11	8	12	50%	During the reporting period three additional interactions were hosted. The Komatsu Learner and Educator Development programme was hosted through private funding received. In addition, two projects that would normally not report under the Education KPI since learner and educator development is not part of its objectives, hosted specific learner and educator development interventions. The programmes are Science Centre Capacity Building (workshops for learners and educators) and the Bloodhound Supersonic Car project (educator workshop).
	Educators reached	8,758	10,425	16,395	13,870	19,410	40%	The variance is due to the educator workshop conducted by the Bloodhound SCC team as well as a higher-than-anticipated number of educators participating in West Coast and Northern Cape initiatives.
	Learners reached	271,641	342,135	280,494	360,320	371,624	3%	The target was met earlier than planned, mostly due to collaborations such as science camps for learners with potential as well as role-modelling campaigns.

OUTCOME: World-class benchmarking and grant-making systems					2015/16			
INDICATORS		Actual 2013	Actual 2014	Actual 2015	Annual target	Actual	% Variance	Explanation
STRATEGIC OBJECTIVE 8		Provide best practice research and innovation support systems						
Grant funding awarded (Rm)		1,186	1,534	2,031	2,106	2,317	10%	Unspent funds were carried over from 2014/15 to 2015/16.
Number of NRF-rated researchers from designated groups	Black %	22%	23%	24%	24%	26%	7%	The rating call resulted in 433 first-time applications, which is in line with existing trends. The ratio of first-time applications from black and female researchers was higher than during the previous reporting period, resulting in an overachievement of the target.
	Black Number	569	668	766	768	866	13%	
	Female %	30%	30%	30%	31%	31%	1%	
	Female Number	780	889	962	992	1,054	6%	

21 ABBREVIATIONS AND ACRONYMS

ACEP	African Coelacanth Ecosystem Programme
AGN	Active galaxy nuclei
ALSA	Antarctic Legacy of South Africa
AOP	African Origins Programme
APP	Annual performance plan
APR	Annual progress report
ARIC	Applied Research, Innovation and Collaboration
ASB	Accounting Standards Board
ASCA	Agulhas System Climate Array
ASSAf	Academy of Science of South Africa
AU	African Union
AVE	Advertising value equivalent
AVN	African VLBI Network
BAC	Bid Award Committee
BBBEE	Broad-Based Black Economic Empowerment
BI	Business Intelligence
BIS	Business Intelligence System
BSocSci	Bachelor of Social Science
BTech	Bachelor of Technology
CA	Chartered account
CAPRISA	Centre for the AIDS Programme of Research in South Africa
CCMA	Commission for Conciliation, Mediation and Arbitration
CEO	Chief Executive Officer
CERN	European Organisation for Nuclear Research (Organisation européenne pour la recherche nucléaire)
CFO	Chief financial officer
CHE	Council on Higher Education
C-HRTEM	Centre for High Resolution Transmission Electron Microscopy
CHS	Carnarvon High School
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLS & IR	Corporate Legal Services and Industrial Relations
CoE	Centre of Excellence
CoP	Community of practice
CPI	Consumer Price Index
CPS	Carnarvon Primary School
CPUT	Cape Peninsula University of Technology
CSIR	Council for Scientific and Industrial Research
CSR	Corporate Social Responsibility
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DFID	Department for International Development (UK)

DGRSDT	Algerian direction générale de la recherche scientifique et du développement technologique
DHET	Department of Higher Education and Training
DNA	Deoxyribonucleic acid
DPhil	Doctor of Philosophy
DST	Department of Science and Technology
EHCD&KG	Energy Human Capacity Development and Knowledge Generation
ERC	European Research Commission
ERM	Enterprise Risk Management
ERP	Energy Research Programme
ESRF	European Synchrotron Radiation Facility
ETDP	Education, Training and Development Practices
EVN	European VLBI Network
F'SATI	French South African Institute of Technology
FUNDISA	Forum of University Nursing Deans in South Africa
GCRP	Global Change Research Plan
GDE	Gauteng Department of Education
GFZ	GeoForschungsZentrum (German Research Centre for Geosciences)
GLONASS	Global Navigation Satellite System
GMSA	Grant Management and Systems Administration
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GRAP	Generally Recognised Accounting Practice
GRI	Global Reporting Initiative
HartRAO	Hartebeesthoek Radio Astronomy Observatory
HBU	Historically black university
HCD	Human capacity development
HEI	Higher education institution
HEMIS	Higher Education Management Information System
HICD	Human and Institutional Capacity Development
HIRAX	Hydrogen Intensity and Real Time Analysis eXperiment
HIV	Human immunodeficiency virus
Hons	Honours
HR	Human resources
HRDS	Human Resource Development Strategy
HRLS	Human Resources and Legal Services
HRTEM	High-resolution Transmission Electron Microscopy
HySA PADEP	Hydrogen South Africa Fuel Cell Public Awareness, Demonstration and Education Platform
IAU	International Astronomical Union
iBOL	International Barcode of Life
ICSU	International Council for Science
ICSU ROA	International Council for Science Regional Office for Africa
ICT	Information and communications technology
IDIA	Inter-University Centre for Data Intensive Astrophysics
IDRC	International Development Research Centre (IDRC)

IEPD	Institutional Engagement and Partnership Development
IFRS	International Financial Reporting Standards
IKS	Indigenous knowledge systems
IP	Intellectual property
IPRDP	Innovation Partnership for Rural Development Programme
IRC	International Relations and Cooperation
ISI	Institute for Scientific Information – now known as Web of Science
ISOLDE	On-Line Isotope Mass Separator
IT	Information technology
iThemba LABS	iThemba Laboratory for Accelerator Based Sciences
JICA	Japan International Cooperation Agency
JINR	Joint Institute for Nuclear Research
JMS	Rhodes School of Journalism and Media Studies
KAT	Karoo Array Telescope
KFD	Knowledge Fields Development
KPI	Key performance indicator
LHC	Large Hadron Collider
LLM	Master of Laws
Manus	Master in Accelerator and Nuclear Science
MARS	Marine and Antarctica Research Strategy
MatSci	Master in Material Science
MCM	Marine and Coastal Management
MDP	Management Development Programme
MoA	Memorandum of agreement
MoU	Memorandum of understanding
MSc	Master of Science
MSSA	Microscopy Society of Southern Africa
MTEF	Medium-Term Expenditure Framework
MTSF	Medium Term Strategic Framework
MWLA	Multi-wavelength astronomy
NACH	National Anti-Corruption Hotline
NASSP	National Astrophysics and Space Science Programme
NBN	National Bioinformatics Network
NDP	National Development Plan 2030
NECSA	Nuclear Energy Corporation of South Africa
Nehawu	National Education, Health and Allied Workers' Union
NEP	National Equipment Programme
NF	National Research Facility
NGO	Non-governmental organisation
NIPMO	National Intellectual Property Management Office
NMDP	New Managers' Development Programme
NMMU	Nelson Mandela Metropolitan University
NNEP	National Nanotechnology Equipment Programme
NPEP	Nanotechnology Public Engagement Programme

NQF	National Qualifications Framework
NRDS	National Research and Development Strategy
NRF	National Research Foundation
NSI	National System of Innovation
NSO	National Science Olympiad
NSTF	National Research and Technology Forum
NSW	National Science Week
NWU	North-West University
NZG	National Zoological Gardens of South Africa
OAD	Office of Astronomy for Development
OECD	Organisation for Economic Co-operation and Development
OHS	Occupational Health and Safety
PAAZAB	African Association of Zoos and Aquaria
PAST	Palaeontological Scientific Trust
PFMA	Public Finance Management Act
PhD	Doctor of Philosophy
PPC	Parliamentary Portfolio Committee
PSA	Public Servants Association of South Africa
PUB	Public Understanding of Biotechnology
R	Rand (South African currency)
RCCE	Research Chairs and Centres of Excellence
R&D	Research and development
RE	Reviews and Evaluation
RIB	Radioactive Beam
RIMS	Research Information Management System
RISA	Research and Innovation Support and Advancement
ROV	Remotely operated vehicle
RSA	Republic of South Africa
RSES	Renewable and Sustainable Energy Scholarships
SA	South Africa
SAAO	South African Astronomical Observatory
SAASTA	South African Agency for Science and Technology Advancement
SABI	South African Biosystematics Initiative
SAEON	South African Environmental Observation Network
SAIAB	South African Institute for Aquatic Biodiversity
SALT	Southern African Large Telescope
SAMREF	South African Marine Research Exploration Forum
Samwu	South African Municipal Workers' Union
SANAP	South African National Antarctic Programme
SANBI	South African National Biodiversity Institute
SANCOR	South African Network for Coastal and Oceanic Research
SANHARP	South African Nuclear Human Asset and Research Programme
SANParks	South African National Parks
SANS	South African National Standard

SANSA	South African National Space Agency
SARChI	South African Research Chairs Initiative
SARIR	South African Research Infrastructure Roadmap
SASA	South African Statistical Association
SASSCAL	Southern African Science Service Centre for Climate Change and Adaptive Land Management
SCC	Supersonic car
SCM	Supply Chain Management
SET	Science, engineering and technology
SETA	Sector Education and Training Authority
SHER	Safety, Health, Environment and Risk
SKA	Square Kilometre Array
SKA SA	Square Kilometre Array South Africa
SLR	Satellite Laser Ranger
SMME	Small, medium and micro-sized enterprises
SREP	Strategic Research Equipment Programme
SSAJRP	Swiss-SA Joint Research Programme
STEMI	Science, technology, engineering, mathematics and innovation
SU	Stellenbosch University
TB	Tuberculosis
TENET	Tertiary Education and Research Network of South Africa
the dti	Department of Trade and Industry
THRIP	Technology and Human Resources for Industry Programme
TYIP	Ten-Year Innovation Plan
UCT	University of Cape Town
UK	United Kingdom
UKZN	University of KwaZulu-Natal
UL	University of Limpopo
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Emergency Fund
Unisa	University of South Africa
UniZul	University of Zululand
UP	University of Pretoria
UPS	Uninterruptible power supply
USA	United States of America
USB-ED	University of Stellenbosch Business School Executive Development
UWC	University of the Western Cape
VLBI	Very Long Baseline Interferometry
WAZA	World Association of Zoos and Aquariums
wBRC	Wildlife Biological Resource Centre
Wits	University of the Witwatersrand
WSF	World Science Forum
WSP	Workplace Skills Plans
YTD	Year to date

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