



# Strategic Plan

of the National Research Foundation

February 2008

# NRF VISION

# 2015



National Research Foundation



## List of Acronyms and Abbreviations

AMCOST	African Ministerial Council for Science & Technology	IPCC	Inter-governmental Panel on Climate Change
ASGISA	Accelerated and Shared Growth Initiative for South Africa	iThembaLABS	Ithemba Laboratory for Accelerator Based Sciences
ASSAf	Academy of Science of South Africa	JIPSA	Joint Initiative on Priority Skills Acquisition
AU	African Union	OECD	Organisation for Economic Cooperation & Development
CHE	Council for Higher Education	MTEF	Medium-term Expenditure Framework
CoE	Centre of Excellence	NACI	National Advisory Council for Innovation
DG	Director-General	NEPAD	New Partnership for Africa's Development
DoE	Department of Education	NRF	National Research Foundation
DST	Department of Science & Technology	NSI	National System of Innovation
DVC	Deputy Vice-Chancellor	NZG	National Zoological Gardens
FDI	Foreign Direct Investment	R&D	Research & Development
FEST	Foundation for Engineering, Science & Technology	SAAO	South African Astronomical Observatory
FTE	Full-time Equivalent	SAASTA	South African Agency for Science & Technology Advancement
GA	General Assembly	SAIAB	South African Institute for Aquatic Biodiversity
GDP	Gross Domestic Product	SALT	Southern African Large Telescope
GERD	Gross Expenditure on Research and Development	SAQA	South African Qualifications Authority
HartRAO	Hartbeeshoek Radio Astronomical Laboratory	SARChI	South African Research Chairs Initiative
HEI	Higher Education Institution	S&T	Science & Technology
HEQC	Higher Education Quality Committee	SET	Science, Engineering & Technology
HESA	Higher Education South Africa	SWOT	Strengths, Weaknesses, Opportunities & Threats
HMO	Hermanus Magnetic Observatory	THRIP	Technology and Human Resources for Industry Programme
ICSU	International Council for Science		



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## Preamble

Strategy is the determination of the long-term goals of an enterprise, the choice of courses of action, and the allocation of resources to ensure the attainment of the stated goals. Essentially it requires the management of the organisation to answer three basic questions:

- What is the organisation's present situation?
- Where does the organisation need to go from here? and
- How should it get there?

The first question prompts managers to evaluate the organisation's environmental conditions and competitive pressures, its current performance levels, strengths, competences and weaknesses. The second question pushes management to make choices about positioning the organisation within its environment, define which clients or client groups it should endeavour to satisfy, and clarify the changes needed in the composition of its units. The third question challenges management to design and execute a strategy capable of moving the organisation in the intended direction, growing its performance impact, and improving its effectiveness and efficiency.

Over the past year the NRF initiated the internal and external processes of drafting its new Strategic Plan, NRF VISION 2015. This Strategic Plan is intended to guide the organisation over the next six to seven years. It

encapsulates the organisation's core values, its strategic goals and the performance targets that support those goals. We believe that the plan will greatly enhance the NRF's ability to serve as a catalyst for promoting and supporting research throughout the National System of Innovation (NSI). Ultimately, of course, we believe that it will assist the NRF in meeting its mandate of utilising the public resources allocated to it in a manner that leads to the benefit of all the people of the Republic.

We are excited about the prospects of such new projects as the South African PhD Project, which was officially launched by the Minister of Science and Technology, Mr Mosibudi Mangena, on 9 November 2007. We look forward to providing support for the development of cohorts of well-educated, well-trained and innovative young researchers who will go forward to create depth within our academic and professional workforce. This will contribute to the vision of ensuring research excellence in a transformed society and a sustainable environment that will benefit not only the present generation but also future generations of South Africans.

In the end, we trust that our efforts will serve to enhance the development of a vibrant and resilient national science system in South Africa and on the African continent.

"Big science" initiatives, such as SALT, underscore the NRF's vision of striving for global competitiveness.



**We look forward to providing support for the development of well-educated, well-trained and innovative young researchers who will ... create depth within our academic and professional workforce [in] a sustainable environment that will benefit the present generation but also future generations.**

# Executive Summary

By acknowledging transformative and structural changes and shifts within the national and global science systems; the growing complexity and dynamism of the national science system and that of the organisation itself; as well as existing “bottlenecks” in this system, the National Research Foundation [NRF] Board, in concert with the President and CEO and his senior management, initiated this Strategic Planning process.

The essence of the organisation is derived from its mandate and incorporates three aspects:

- Its role as agency of choice in the science landscape;
- The provision of multi-user science platforms; and
- The promotion of a science culture and science advancement.

All of the above stand in service of developing a globally competitive science system, serviced by a vibrant and demographically representative science community.

These broad objectives are tackled by redefining the vision, NRF VISION 2015, and mission for the

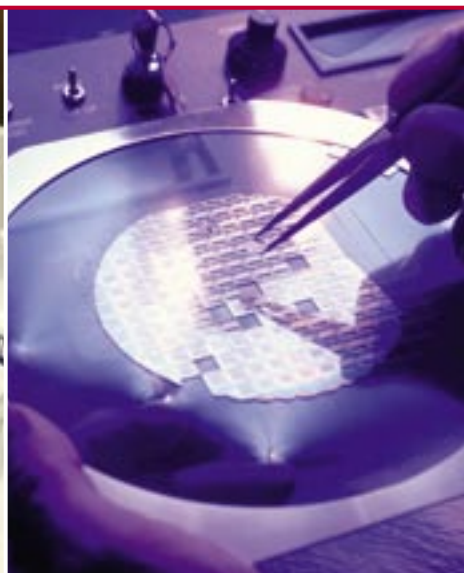
organisation and by introducing an explicit five-point strategy. This strategy includes:

- Striving for global competitiveness;
- A representative science system;
- World-class benchmarking and grant systems;
- Leading-edge research, technology and innovation platforms; and
- A vibrant national science system.

A marked feature of this redefined vision and strategy is the shift from a demand-driven to a strategy-push agency.

It is our intention, through this five-point strategy, to contribute to those Millennium Development Goals ratified by government and to support its efforts to alleviate poverty. This will primarily be achieved by promoting and supporting knowledge-based and research-driven solutions to a more equitable and sustainable South Africa – and African continent. Moreover, key to accomplishing this is our envisaged science-based contribution to national human capacity development initiatives such as ASGISA and JIPSA.

South Africa is focusing on building a knowledge economy within an emergent market context.





## Introduction

It has now been several years since the adoption of the first NRF Strategic Plan and considerable changes have occurred both internally within the organisation, and externally in the NSI as a whole.

Some of the notable shifts in the broader national science system, as well as in the higher education research milieu, are outlined briefly in the following sections.

The development of the NRF Strategic Plan for the period 2008 – 2015, NRF VISION 2015, has been informed by a number of review input factors. The most notable among these were the NRF Institutional Review (2005); our internal landscaping document, “Quo vadis NRF?” (2006); the report of the OECD Review of South Africa’s National System of Innovation (2007); the DST Ten Year Plan (July 2007) and, most importantly, the mandate of the NRF as prescribed by the NRF Act of 1998 with due consideration to proposed amendments.

A notable innovation in the development of the present Strategic Plan has been the extensive and wide-ranging consultations conducted with all major NRF stakeholders within the NSI. The draft plan was placed on the NRF website for six weeks for internal and external comment via a questionnaire that solicited responses from national and international stakeholders and partners.

A special briefing session was held with the Director-General (DG) of the DST and his senior officials. This was followed by a business breakfast with the DGs and senior public officials in which the NRF was promoted as the premier public agency within the R&D sector against the backdrop of this plan. Further consultations with other public R&D stakeholders – Science Councils, ASSAf, CHE, etc. – are ongoing with the view to obtain further clarification of the perceived or expected role of the NRF within the NSI. In the period leading up to the finalisation of this Strategic Plan, NRF delegations made official visits abroad, and overseas governmental and partner delegations came to visit the

NRF. Our discussions of the key thrusts of the draft plan with these partners served to open opportunities for intensified research collaboration, particularly within the domain of multidisciplinary international programmes. As a prime example, the proposed “PhD Project” attracted particular interest.

The key “themes”, which emerged from these intensive interactions and the web-based feedback, include:

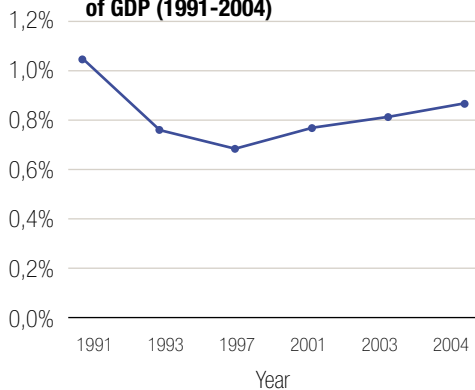
- The need for intensive human capacity development, including addressing the critical skills crisis across all sectors – academic, professional and technical – and the transformation bottlenecks **(44%)**;
- Clarifying the role of the NRF within the NSI, including its evolving relationships across the system as well as its functions *vis-à-vis* the National Research Facilities **(22%)**;
- Broader NSI-related questions, including that of the NRF serving as research support agency for government departments other than just the DST;
- The “alignment” of the NRF plan with the Department of Science and Technology’s (DST) Ten Year Plan for Innovation (Innovation towards a knowledge economy: the 10-year plan for South Africa (2008 – 2018)) and to its various strategies currently under deliberation, including the Human Capacity Development and the five “Grand Challenges” as drivers of the NSI;
- The unresolved DST – NRF – DoE (research policies) interrelatedness;
- The relationships between the NRF and the other Science Councils, research institutes and private sector research and training bodies **(21%)**;
- The draft Strategic Plan itself solicited numerous interventions, comments and suggested changes **(13%)**.

We have noted comments that interventions with private sector R&D partners should be aggressively pursued in concert with other key public sector R&D stakeholders.

# Growing the National System of Innovation

The years immediately following the announcement of the abolition of statutory apartheid in South Africa saw a gradual decrease in the amount of R&D investment as a percentage of GDP, reaching a low of 0,65% in 1997 (see Figure 1). But, since then, the figure has risen steadily. In his budget speech of May 2007, the Minister of Science and Technology, Mr Mosibudi Mangena, stated that the figure stood at 0,87% of GDP and was on track to reach 1% of GDP by 2008. The GDP itself has also seen consistent growth: from US\$133 billion (2000) through US\$166 billion (2003) to US\$240 billion (2005). Estimates for 2006 are at US\$280 billion.

**Figure 1: GERD as a percentage of GDP (1991-2004)**



It is anticipated that, as government departments within the economic cluster streamline their current Strategic Plans and develop their proposed plans and anticipated MTEF expenditure, their R&D allocations will find their way into the national science system, with the NRF availing these departments of its distinct capabilities as the country's premier national research support agency.

It also has been only a few years since the merger, restructuring and redesignation of several of the country's HEIs in line with the recommendations of the "Shape and Size" (CHE) document (2001).

Despite some progress in the above regard being noted, ongoing bottleneck uncertainties and constraints remain and serve to stall the vigorous involvement of all tertiary institutions in publicly-funded R&D initiatives.

Based on the outcomes of the 2005 DST-DoE conference (Human resources, development and R&D policies) and on the urgent requests made during the roadshow, the NRF Executive and Board has undertaken to mediate a range of high-level interactions between DoE, CHE and HEQC, HESA, SAQA, uMalusi, DST, NACI and ASSAf as a priority within the first phase of this plan. It is widely held that resolving the mentioned "systems bottlenecks" will contribute positively to achieving the strategic goals detailed in this plan.

Further issues that require urgent attention include the unevenness within the higher education system regarding, amongst others, research management and administration, facilitation of staff development, promotion and support of postdoctoral career paths, and retention of research and mentoring expertise beyond retirement. Here, too, the NRF intends to investigate and implement a range of interventions.

Furthermore, there has been a noticeable increase in the rate of internationalisation of South African research activities. An ever-increasing number of researchers and students are being exposed to our various strategic bilateral programmes; to the more than 30 ICSU-related unions, associate bodies, commissions and working groups; and to an ever-growing range of international, professional, scientific networks and partnerships. Moreover, a growing number of South African scientists are serving in executive capacities on international science bodies and associations. Just recently, we have witnessed several leading South African environmental and climate change scientists serving on the IPCC working groups, six of them on respective authorial teams. We note with pride that these scientists are to share in the 2007 Nobel Peace Prize.

Special attention has to be paid to increased interaction with researchers and research bodies on the African continent and to the promotion, internationalisation and support of professional associations within the Humanities and Social Sciences. Most of the issues mentioned above are captured in the next section of this document.

**NSI: The good news**

- steady increases in R&D investment as a percentage of GDP
- marked growth in internationalisation of SA research activities

# Science System Challenges – External and Internal

**Challenges:**

- A resource-based economy alone can no longer provide the levels of development and growth to establish and maintain international competitiveness.
- We must focus our attention and efforts on building the knowledge economy within an emergent market context.
- The challenges are myriad for a research community as small as ours with some 17 000 FTE researchers.

Our background document, “Quo vadis NRF?”, addressed a broad range of critical systems issues related to the NSI. For, despite the abovementioned positive developments, serious bottlenecks still remain throughout the national science system. Notable examples include

retaining postgraduate candidates, particularly blacks, as well as research expertise beyond retirement in the publicly funded research system. The SWOT table below, developed by the OECD review panel, encapsulates many of the issues raised in the “Quo Vadis” document:

**Table 1: South Africa’s Strengths, Weaknesses, Opportunities and Threats (SWOT) – from OECD (2007)**

<b>Strengths</b>	<b>Opportunities</b>
<ul style="list-style-type: none"> <li>• Resource-based industries and related Knowledge-Intensive Business Services (KIBS)</li> <li>• Knowledge infrastructure, albeit small in relation to the size of the overall population</li> <li>• High proportion of BERD in GERD</li> <li>• Tradition of linkage between major industries and the knowledge infrastructure</li> <li>• Industrial and academic international networks</li> <li>• Political awareness on the importance of science, technology and innovation for sustainable growth</li> <li>• Open, participative governance with mechanisms in place for cross-departmental coordination</li> </ul>	<ul style="list-style-type: none"> <li>• Raise economic performance by building on existing innovation system strengths in industry – including large firms – and the knowledge infrastructure</li> <li>• Capitalise on the investment boom which provides a window of opportunity for technology development, acquisition and learning – increasing absorptive capacities</li> <li>• Attract FDI to establish durable South African capacities</li> <li>• Exploit latent talents of the majority</li> <li>• Build on industry-research sector interactions as “focusing devices” for developing the knowledge infrastructure</li> <li>• Revise mental models of how the innovation system operates to put producers in the centre</li> <li>• Further modernise the State’s role in the innovation system via “agencification” and the creation of a national policy arena</li> </ul>
<b>Weaknesses</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Poor quality schooling for many citizens</li> <li>• Human resource shortages at all levels involving mathematics, science and technology</li> <li>• Lack of design, engineering, entrepreneurial and management actors (DEEM) and R&amp;D capacity, leading to an “engineering gap”</li> <li>• Ageing, White, male dominance of industrial and academic R&amp;D</li> <li>• Mental models of how the innovation system operates are over-focused on the role of the State</li> <li>• Governance of the State components of the innovation system is insufficiently holistic</li> <li>• Strategy implementation capacity in the State’s part of the innovation system</li> <li>• Use of “level playing field” idea in funding HE impedes the development of new institutions</li> <li>• Large “second economy” with insufficient entrepreneurial and technological skills</li> <li>• Inconsistencies between immigration policies and the human resource needs of the innovation system</li> </ul>	<ul style="list-style-type: none"> <li>• HIV/AIDS</li> <li>• Social unrest, if the pace of development falters</li> <li>• Demographic pressures on education, research and innovation systems caused by a large increase in the cohort of people born in the 1990s</li> </ul>

The NRF Executive and Board also engaged in a strategic analysis that focused strictly on the organisation. That analysis revealed the salient strengths and weaknesses of the organisation, as well as highlighted the opportunities and threats in the environment. These are captured in Table 2 below.

NACI is currently leading a process of exploring and developing recommendations to the Minister of Science and Technology to directly respond to the system

challenges posed by the OECD review. The NRF is intimately involved in these discussions.

Similarly, HESA has engaged all tertiary institutions on the current and projected impacts of the HIV/AIDS pandemic on a national R&D landscape, on our social fabric and on the individual institutions (regional impact). The NRF intends engaging HESA in this process as well as focusing its attention on possible organisational impacts of the pandemic.

**Table 2: NRF Strengths, Weaknesses, Opportunities and Threats (SWOT)**

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Efficient grant management and support system</li> <li>• Quality evaluation and assessment systems</li> <li>• Established suite of National Research Facilities</li> <li>• Contributions to human capacity development</li> <li>• Strategic intelligence capabilities</li> <li>• Science advancement capabilities</li> <li>• Sound international partnerships</li> <li>• Established profile within Academia</li> <li>• Committed people</li> </ul>	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Continued growth in R&amp;D spending – public and private</li> <li>• Close national and international linkages (“big science” and African opportunities)</li> <li>• Strategic alignment with national priorities</li> <li>• New leadership in the NRF and the DST</li> <li>• ASGISA/JIPSA</li> <li>• Brain gain initiatives (CoE and Chairs)</li> <li>• Potential emergence of new national research facilities</li> <li>• Tradition of linkage between major industries and the knowledge infrastructure</li> </ul>
<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Restricted number of income streams and budget</li> <li>• Inadequate internal and external stakeholder communication</li> <li>• Vulnerable and under-resourced National Research Facilities</li> <li>• Inadequate staff retention and succession planning</li> <li>• Incomplete transformation</li> <li>• Inadequate strategic focus</li> <li>• IT infrastructure inadequate</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• HIV/AIDS</li> <li>• Demographic trends in research community</li> <li>• Fragmentation of agency functions across the NSI</li> <li>• Education pipeline restrictions – low-quality science and maths outputs at all levels</li> <li>• Brain gain restrictions</li> <li>• Lack of systemic and strategic investment strategies</li> </ul>

Two of the NRF’s key strengths are its established profile within Academia and its contribution to people development.



## Contexts of the National System of Innovation

Taking cognisance of the OECD (2007) system-wide SWOT analysis mentioned in the previous section, we would argue that contemporary southern Africa provides many interdisciplinary and strategic challenges and opportunities to scholars and scientists.

For the majority of world opinion, South Africa remains an enigma because of the coexistence of a first- and a third-world economy within the country. Economic inequality, previously determined by race, continues to manifest itself as an intractable phenomenon. Despite vigorous State interventions in various forms, structural poverty has increased to alarming proportions. And, despite a plethora of State-driven corrective policies and programmes – social spending on welfare, education and health; integrated development plans at all tiers of

Two of the NRF's strategic goals are to have a representative science workforce in South Africa contributing to an internationally competitive science system.

government; land reform and housing provision – social cohesion remains elusive, undergirded as it is by the spatial segregation of the apartheid past. Race, culture and class remain major factors in this regard for the majority of the population – the Blacks.

In both the public and private sectors – and especially within the R&D sector – the gross lack of capacity and skills for the implementation of the abovementioned wide-ranging interventions constrains the unfolding of equitable, sustainable development in virtually all areas of delivery, including research. The skills shortage impacts on all sectors of the economy, despite the growth in number of technically trained and tertiary qualified new entries into the market place.

The HIV/AIDS pandemic, the prevalence and spread of malaria, the resurgence of tuberculosis and the dramatic drop of the average mortality age are all features of "systems failure" at various levels.

A crucial constraint within the NSI – mentioned with great concern at all institutional roadshows and in the written inputs – can be classified as "poor schooling and education, inadequate teacher training", especially in rural South Africa. This is particularly evident in the low number and quality of matriculants entering the higher education system with mathematics and science on the higher grade. This is despite the fact that the number of matriculants has risen dramatically over the past 10 years.

Environmental degradation, biodiversity loss and climate change – both natural and human-induced – are all huge challenges to be urgently faced within the next years, if an effective turnaround is to be seen. Food security, water, sanitation, energy, telecommunications, and advanced manufacturing all require sustained, innovative, knowledge-based interventions to bolster the knowledge economy in a growth-driven emergent market such as South Africa.

It is against this challenging context that the NRF has to respond by promoting research support programmes and platforms. Therefore, our question is, what are the implications for the NRF?



## Implications for the NRF

The challenges and opportunities as identified above, are myriad for a research community as small as ours with some 17 000 FTE researchers in the public and private sectors who perform and manage our research agendas, programmes and projects.

The NRF, in concert with all stakeholders in the NSI, seeks to focus and align its strategy with the needs of a developing country such as ours. These identified “tasks”, are:

- Facilitate a resilient research culture;
- Grow cohorts of well-trained and motivated postgraduate researchers;
- Provide access to state-of-the-art national research facilities and infrastructure;
- Promote the notion of “science in and for society”;
- Pursue a sustainable future.

All of these, collectively, speak to the new NRF VISION 2015.

The national government’s response to these development and systems challenges has, over the past 10 years, been multi-pronged. One such response is that of pushing for the realisation of a viable and sustainable knowledge economy by restructuring, transforming and redirecting the NSI. The National R&D Strategy, driven

by the DST, is an important instrument in this regard. However, as shown in the OECD Review of South Africa’s National System of Innovation (2007), the transformation and restructuring has been uneven and has hardly involved private sector R&D stakeholders.

There are implications for the NRF. As an agent of change, and as the premier research support agency within the NSI, it will have to drive processes of collaborative agenda-setting regarding national priorities across the system to promote efficiencies – and to realise the strategic goals as detailed below. An example of such strategic intervention is greatly enhancing the THRIP programme. This programme received high acclaim in the OECD (2007) Review Report, and could become a much bigger facilitator and innovator across both public and private R&D interventions in future, driven by the concept of research-based innovation, human resources development and skills training. Opportunities in, for example, the energy, transport, and environment and services sectors are unfolding rapidly. So, too, in sectors of the “second economy”. To promote this broader concept, government departments within the economic cluster as well as such industries engaged in the abovementioned sectors will be involved in the strategic research areas mentioned below. The above activities will, where appropriate, involve the newly established Technology Innovation Agency (TIA).

## Mandate

The role of the NRF in South African society has been clearly defined by the NRF Act. This has important governance implications for the NRF, its stakeholders and partners throughout the NSI. The statutory mandate of the NRF reads as follows:

**To promote and support research through funding, human resource development and the provision of the necessary 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.**

NRF Act, No. 23 of 1998

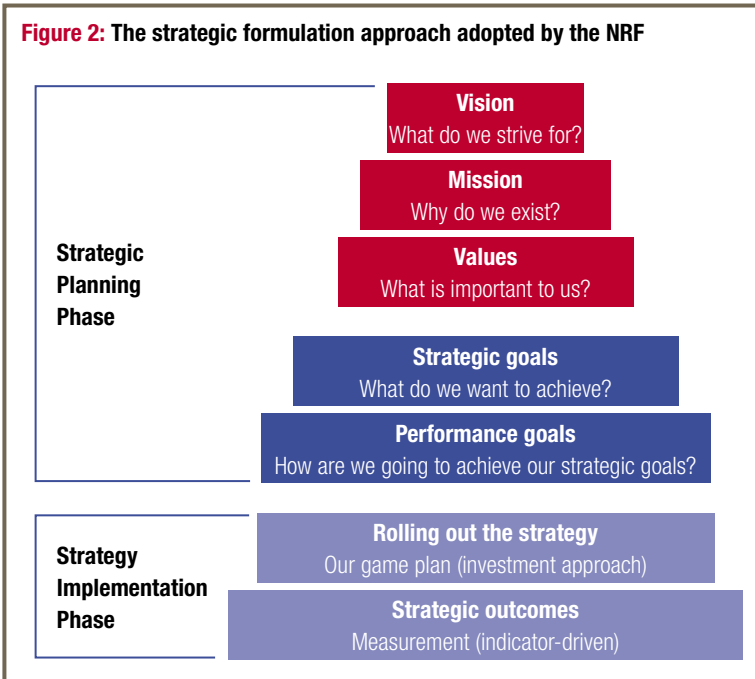
# Interpreting the Mandate

A statutory mandate, although enabling in many facets, remains broad in its focus – and largely national in its

scope. The NRF has portrayed its vision and mission statements and set its strategic goals and objectives to encompass the range of functions as delineated in the mandate, scope and object of the Act. This portrayal emerges in the context of the Strategic Planning process where the NRF posed the following questions:

- What is it that we wish to achieve within the prescribed timeframe?
- What are our strategic goals and targets?
- What is the nature of our envisaged activities and programmes to achieve the above strategic goals?
- How will progress towards these strategic goals be monitored, measured, and evaluated?
- Where and how do we access the resources required to do it all?

It is in interpreting and implementing this mandate that we engaged all stakeholders and partners – national and international – in the consultative process of this Strategic Planning exercise. The approach adopted for the Strategic Planning process is outlined in Figure 2.



## Role of the NRF

The role which the NRF plays in the NSI is depicted in Figure 3 (see page 12), which was adapted from the recent OECD Review Report. The diagram indicates that, unlike other Science Councils whose role is research performance (level 4 in Fig. 3), the NRF primarily fulfils an agency role (level 3 in Fig. 3), with a smaller portion (25%) of its activity allocated to research performance through the National Research Facilities. At first glance

The South African youth is the nucleus of the plan to transform SET human capital in our country.

the NRF might be seen to violate the Rothschild Principle that advocates for a clear delineation between research funding and research performance. This principle states that there should be a clear separation between the policymaking (ministry), customer (agency), and contracting (project performing) roles for a NSI to function properly. Indeed, some in the research community have observed that by being a part of the NRF, the research facilities could possibly double-dip into the research support funds. A more comprehensive system analysis will show that there are several strategic advantages to South African researchers for the management of the National Research Facilities to remain within the NRF. The provisions included in the proposed amendments to the NRF Act (2007) provide for the NRF to foster fundamental and applied research, from data gathering through to information analysis and technology development by means of projects run by the National Research Facilities or researchers gaining access to the National Research Facilities. The Act amendments further note that any researcher or research institution may apply to utilise a national facility for research or instruction, provided that



the employees of the Foundation and its officers may not receive more favourable conditions for funding than other researchers. Furthermore, the NRF Institutional Review Report (2005) urged that the NRF should aggressively engage in its role as an agent of change and act as a catalyst within the NSI.

In this regard it should be borne in mind that these National Research Facilities are placed under the custodianship of the NRF by the Minister of Science and Technology for very specific strategic reasons. Probably the most important reason is that these facilities are declared national facilities to be used by all the HEIs, each of which, alone, would not be able to afford the capital and maintenance costs of the facility.

The NRF, therefore, has the responsibility to maintain the National Research Facilities in “state-of-the-art” condition so that they are in a position to fulfil a number of critical functions in the science system. These include:

- Making qualified contributions to national research priorities and platforms (e.g. astronomy);
- Contributing to national human resources development and training initiatives (e.g. scarce skills development);
- Fostering strategic regional, continental and international linkages (e.g. by means of National Research Facilities’ Flagship programmes); and
- Promoting and advancing science education and awareness, through SAASTA, by means of public outreach and strategic community engagement programmes (e.g. Winter and Summer Schools for high school learners and undergraduate students).

To fulfil these goals, the NRF has a national responsibility to ensure the sustainability of these programmes and initiatives through:

- Appropriate resourcing of the research platforms at the National Research Facilities;
- Ensuring the effective utilisation of the installed infrastructure;
- Maximising the many, targeted international linkages and networks; and
- Undertaking strategic community engagement programmes in cooperation with SAASTA.

By enhancing the infrastructure, management and operations of these facilities, the NRF will – in consultation with the Board and the Ministry for Science

and Technology – at regular intervals provide strategic advice regarding the appropriate placement of the National Research Facilities within the NSI, as well as provide advice on the creation of new national research facilities (for example, within the Humanities and Social Sciences disciplines).

One proposal which will be implemented during the tenure of this plan will be to encourage the joint appointment of appropriately qualified National Research Facilities researchers at relevant HEIs to foster mentoring and training of postgraduate candidates, as well as provide access to the infrastructure available at the National Research Facilities. Joint development and implementation of postgraduate programmes, such as the NASSP, will be encouraged.

Another unit of the NRF, SAASTA, may upon superficial analysis be questioned by some in terms of fit within the NRF family of units. A more meticulous analysis will reveal that SAASTA’s mandate fits very well with the NRF mandate, and is even complementary to it. The SAASTA mandate reads as follows:

**The South African Agency  
for Science and Technology  
Advancement (SAASTA)  
aims to advance public  
awareness, appreciation  
and engagement of science,  
engineering and technology in  
South Africa. This is achieved  
through education, science  
communication and direct  
engagement interventions for  
youth and the society at large.**

It is, broadly speaking, about the South African “youth as the nucleus of the plan to transform our country in general (and) the South African SET human capital in particular”. The NRF therefore views SAASTA’s critical interventions in promoting science education and advancement amongst the youth as a key contribution to unlocking and achieving the NRF’s long-term strategic goals, such as the production of high-quality PhDs.

**Figure 3: The South African Science Landscape**

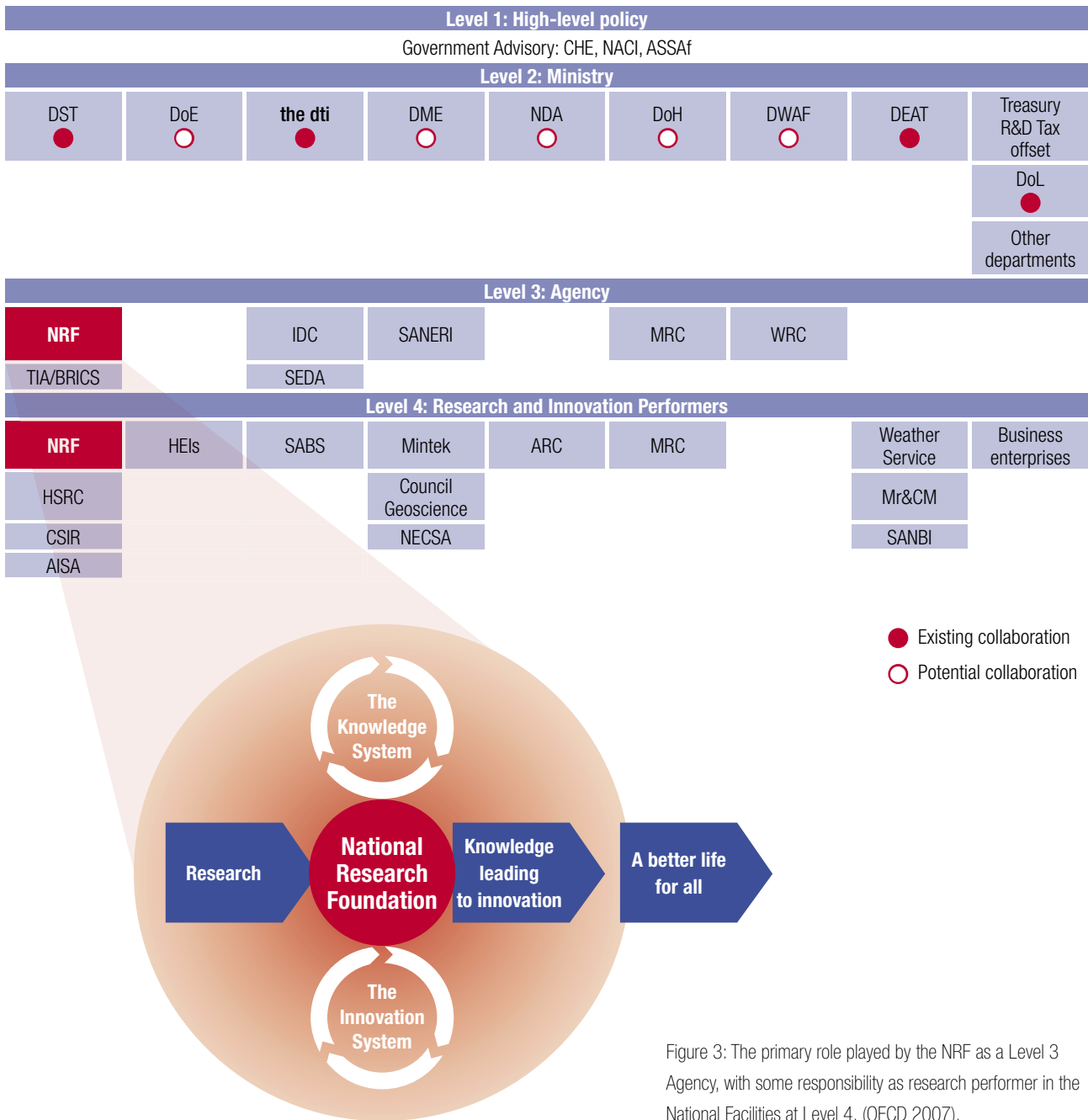


Figure 3: The primary role played by the NRF as a Level 3 Agency, with some responsibility as research performer in the National Facilities at Level 4. (OECD 2007).

The National Research Facilities are placed under the custodianship of the NRF so that they can be used by the research community across the national science system.

# NRF VISION 2015

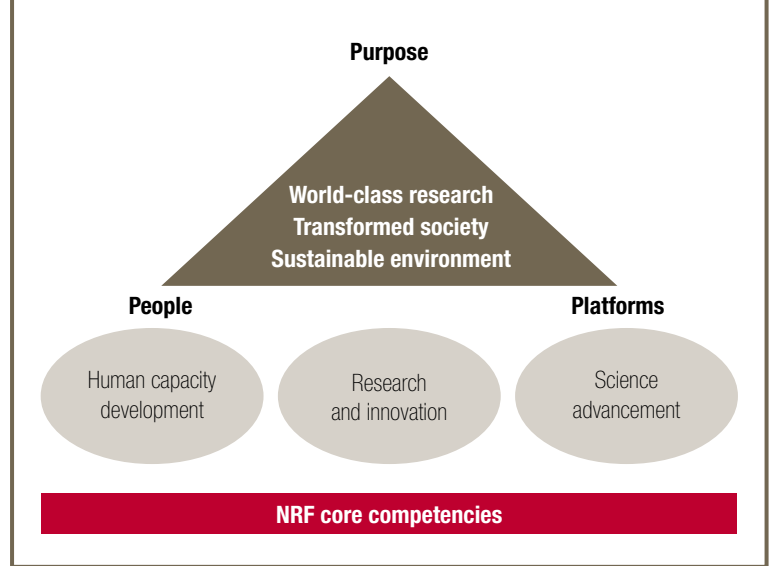
South Africa has been designated as one of the top ten “Big Emerging Economies” in the new century. It is also viewed as a “pivotal state”, if not an “emerging power” within its region. It is an economic engine that is at the heart of NEPAD with the potential to galvanise the energies of its neighbouring states, the sub-continent, and the rest of Africa, opening up the potential for vast and unprecedented economic possibilities. Through its roles at the AU, within the NEPAD group of African nations and by virtue of its leading role within the AU Ministers’ Council for S&T (AMCOST) and for higher education, the government of South Africa provides various forms of political, material and capacity support to realise our national contributions to an African Renaissance.

By hosting the ICSU Regional Office for Africa (ICSU-ROA) at its headquarters, the NRF has greatly enhanced access to and facilitation of networking activities of researchers on the African continent and with members of the African Diaspora and of the global ICSU community. The four Science Plans to be launched by the ICSU-ROA in the course of 2008 will afford South African scientists opportunities to participate in and contribute to strategic research solutions on the African continent in the areas of energy, health and human wellbeing, climate change and that of natural and human-induced hazards.

It is in the context of such challenges and opportunities that the NRF, in executing its statutory mandate in a facilitative, flexible, proactive, transparent and responsible manner, has committed itself to facilitating the growth and development of a knowledge society – also at a regional level. This is what is expected of it by the people of South Africa as represented in the National Assembly, and by government, to whom is assigned the task of custodian and prime funder of our core mandate. As quoted earlier, this mandate impels the NRF to focus all its activities and programmes towards creating benefits and prosperity for all South Africans.

In unfolding this mandate within our contemporary national, regional and international contexts, it is essential that there are targeted research collaborations, networking and strategic linkages to address the multiple socio-economic, political, environmental and cultural challenges facing us. All of these contribute significantly to meeting our challenges – and in realising our vision.

**Figure 4: The relationships between the NRF Vision, Mission and the Strategic Imperatives of the organisation**



Close collaboration is required with government’s key R&D driver, the Ministry of Science and Technology and its Department of Science and Technology. Such cooperation also needs to be facilitated and effected across the publicly funded R&D system regarding agenda-setting (prioritisation), co-programming, co-funding and, most crucially, alignment of R&D policies and programmes for systems efficiency and efficacy.

The NRF VISION 2015, therefore, reads:

**World-class research  
Transformed society  
Sustainable environment**

As reflected in President Mbeki’s statement at the launch of National Science Week 2007, this vision statement encompasses the three-way tension the country experiences between competing in a global knowledge economy and directing the acquired skills towards addressing our pressing local needs and aspirations as a nation. It also expresses the NRF’s commitment to ensuring that the resources of planet Earth are utilised in a sustainable way to provide guarantees for future generations. This tension is healthy and should provide the impetus to make significant progress over the next seven years in meeting our development challenges, hence the title of this document:

## NRF VISION 2015

The relationships between our vision, mission and our strategic imperatives are schematically depicted in Figure 4.

*This figure incorporates the following elements of our Strategic Plan, the triangle with three “P’s” where level one, “purpose” implies our mandate, and the means are captured in “people” and “platforms”. Our vision is ensconced at the centre, level two; where the circles below the triangle encapsulate the essence of our strategic imperatives (what we do). Level four, our core competencies, captures that which “supports” and undergirds all that which we undertake and envision. All of these are underpinned by the NRF value system.*

## Mission Statement

As the country's premier research support agency, the NRF endeavours to fulfil its mandate through coordinated interventions across the public R&D sector and through public-private partnerships in concert with our key stakeholders in the public and private sectors. These include government, in particular the DST, HEIs, industry and civil society.

Cognisant of these factors, we propose that:

**The mission of the NRF is to contribute to the knowledge economy in South Africa to attain at least 1% of global R&D output by 2015.**

The NRF is committed to ensuring that the resources of planet Earth are used in a sustainable way to provide guarantees for future generations.

This will be achieved by:

- Supporting high-quality research and knowledge generation for the sustainable benefit of a healthy society;
- Supporting the development of a critical mass of

globally competitive human resources in prioritised areas;

- Promoting and advancing science, research and innovation;
- Advancing science in society;
- Providing state-of-the-art research infrastructure; and
- Promoting and enhancing international networks and partnerships, particularly in Africa.

In recognition of our immediate past achievements and system failures, the NRF executive management will engage stakeholders throughout the national science system to effect a more resilient, responsive and proactive NSI. This will be achieved by engaging in key strategic policy issues to support the efficient implementation of this Strategic Plan.

Our strategic responsibilities through focused bilateral and targeted international partnerships – such as the intergovernmental, interagency S&T agreements, the multilateral obligations and responsibilities – are closely aligned and linked to our mission.



## NRF Values Statement

In the context of the new Strategic Plan, the NRF Vision 2015, it was deemed opportune that the values of the organisation be revisited to ensure alignment with the overall direction and strategy. Within this context, the NRF management embarked upon a series of Value Sharing Workshops conducted throughout the NRF business units. The objective of the workshops was to foster, in a bottom-up process, a single set of values to define a common organisational culture for the NRF. The values are intended to fulfil several objectives, including to:

- define accepted organisational norms and behaviours;
- provide a benchmark for staff to use for self-evaluation of professional behaviour and responsibility;
- communicate to both internal and external stakeholders that the NRF takes its ethical

commitments seriously;

- promote high standards of business practices; and
- enhance the NRF's reputation to all its stakeholders.

The shared values synthesised from this process are:

- Passion for Excellence
- World-class Service
- Respect
- People-centred
- Ethics and Integrity
- Accountability

These values are to be integrated into the NRF Code of Conduct and Practice and as a guide for ethical reasoning and decision-making that will ensure that all in the NRF meet the highest standards of conduct in all our dealings as staff of the NRF.

## Core Competencies of the NRF

Core competencies are those areas in which an organisation has distinctive advantages, or activities that the organisation performs better than any other institution within the NSI landscape. As part of mapping the way forward for the organisation and considering its strategic position, we have also attempted to redefine the core competencies of the NRF. These core competencies are embedded in providing:

- Leading-edge grant management systems;
- World-class research benchmarking;
- State-of-the-art research platforms;
- Strategic science information;
- Facilitation of international science cooperation, networks and partnerships;

- Science advancement through community engagement;
- Catalyst for system-wide research collaboration; and
- Science and technology management.

The NRF recognises that these core competencies are largely based on the tacit knowledge the organisation possesses, which is valuable, and difficult to imitate.

They should be continually strengthened and nurtured by reflecting on the values and culture of the organisation, thereby ensuring that they are not lost in the process of strategy implementation.

## Strategic Goals of the NRF

Taking into account the NRF's vision and mission statements, as well as our core competencies, we have formulated a five-point plan for the organisation by means of which we have identified five major high-level strategic goals for the next six to seven years. These strategic goals are depicted in Figure 5.

As shown, these strategic and performance goals serve as the drivers for achieving a system-wide impact in the form of a prosperous and sustainable African landscape and in determining a knowledge society for the benefit of all.

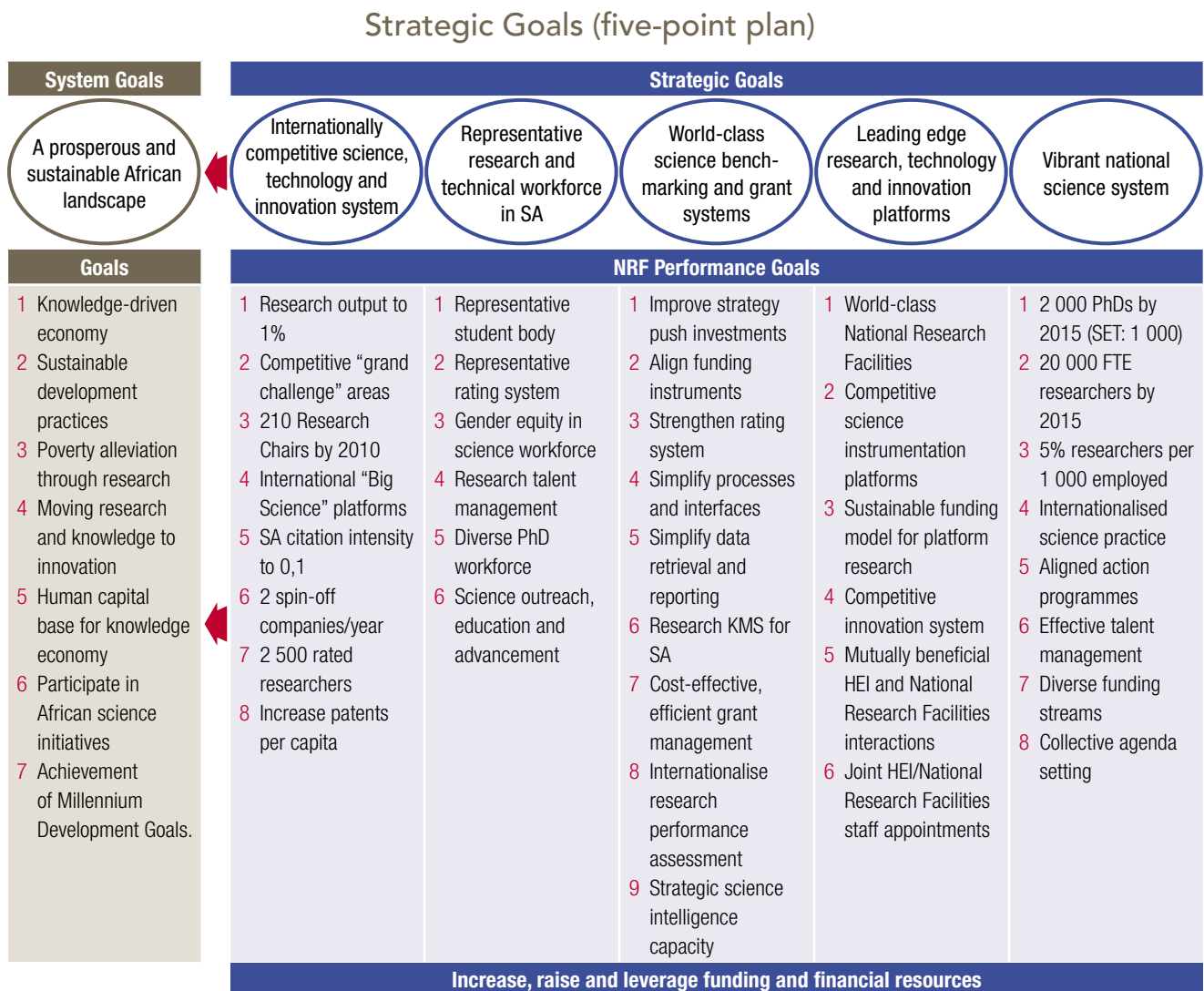


# How will the NRF achieve these Strategic Goals?

Setting strategic goals is one matter, but ensuring that they are achieved requires the development of lucid implementation plans for each section within the NRF. Figure 6 presents a number of performance goals that are directly related to each of the high-level strategic goals outlined earlier. These performance goals present aspirational targets for the organisation. Similarly, these should provide a clearer translation of the specific action

agendas to be captured in the implementation plans of each business unit, section, division and programme of the organisation. It is not expected that each business unit should deliver on each and every aspect, but that they should be strategically selective and focused. The organisation as a whole should aspire to deliver on all of these performance goals.

**Figure 5: The high-level Strategic Goals of the NRF translated into more specific Performance Goals that have to be delivered across the organisation as a whole**



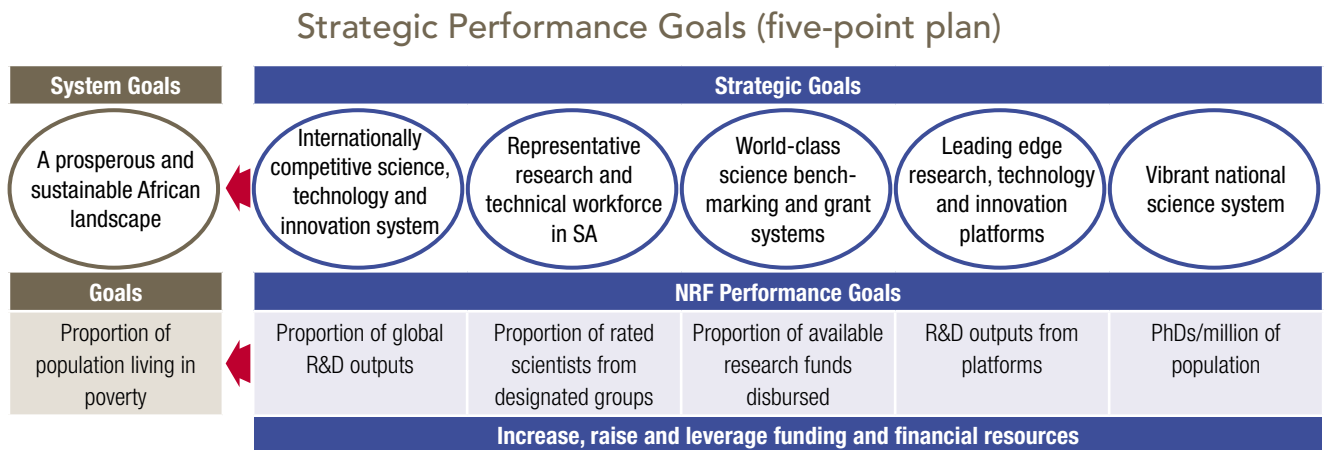
# Performance Indicator Development

Imperative to the delivery of the NRF's strategic goals is a set of measurable performance indicators that will adequately reflect the ambitions and activities of the NRF. Collectively these performance indicators should reflect the internal operations of the NRF, its strategic priorities as well as the reporting requirements to the NRF Board, the Ministry, Parliamentary Portfolio Committee for S&T and, ultimately, to National Treasury.

As a first step, the NRF has identified its key performance indicators for each of its high-level strategic goals (Figure 6). These are to be cascaded down into a comprehensive set of operational performance indicators for the entire organisation and for each NRF business unit. Our intention is to develop the internal business processes to the degree that the complete set of indicators will be generated routinely in the organisation to serve both operational and strategic information goals.\*

*\* This would normally occur during the annual business planning process based, to some extent, on annual performance reports.*

**Figure 6: The key performance indicators for the high-level Strategic Goals of the NRF**



## Rolling out the Strategy

To foster a culture of transparency and accountability we intend publishing our implementation plans and annual business plans and budgets for close scrutiny – and for corrective action as proposed internally or externally. In the interest of simplicity and to streamline complex processes, we trust that this practice – as currently utilised by several of our international agency partners – will greatly enhance our publicly and privately funded strategic interventions, and provide a greater level of confidence in realising our vision and mission statements.



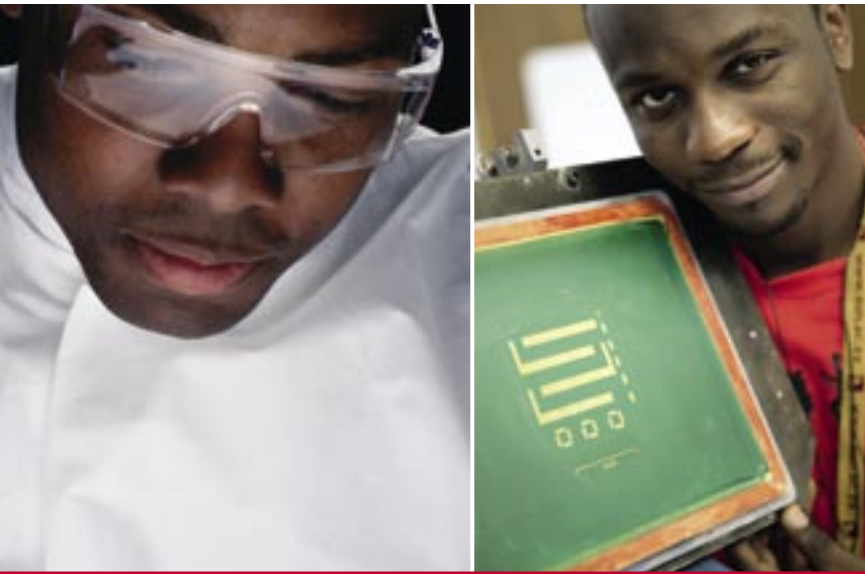
## Our Investment Principles

The NRF has formulated a number of principles that will underpin its investment approach across the range of its interventions, functions, facilities and programmes. We will be rigorous about developing, monitoring and evaluating the core and strategic principles, processes, programmes and platforms – in close alignment with our mandate. We undertake, too, to be mindful of the “changes and shifts” which may occur in the national

Transformation will be monitored and rewarded and underscores the NRF’s investment principles.

science system for the duration of this plan, and consider the flexibility principle within the NSI of critical importance. These investment principles are briefly set out here and, once approved, will form the basis of our implementation plans.

- The principle of competitive funding will apply to all applicants.
- A balanced strategy-driven versus demand-pull approach will be employed.
- We will adhere to merit-based, rigorous peer review and rating of the research outputs of individuals.
- The PhD will continue to be a critical systems driver.
- We will encourage and promote cross-fertilisation and rotation of expertise and talent between the NRF and other entities in the national science system.
- There will be appropriate allocation of resources throughout the NRF for efficient delivery of services, and for delivery of our strategic goals.
- Core principles of fairness, transparency and accountability will apply to all of the above.
- The principle of transformation will be upheld as a consideration at all times. As such, transformation will be monitored and rewarded.



**The South African PhD Project** (*SA PhD Project*) is a new initiative of the National Research Foundation that aims to significantly increase the diversity and number of highly skilled knowledge workers by providing non-financial support to South African postgraduate students. This programme complements the current suite of NRF postgraduate student funding programmes and encourages a high progression from undergraduate to doctoral level studies as well as above average completion rates.

The *SA PhD Project* support mechanisms include offering a comprehensive “one-stop-shop” for potential candidates. This will provide information on relevant training programmes, the doctoral study process or PhD life cycle; funding and networking opportunities, career management and other non-technical skills development, as well as discipline-specific peer and mentor support groups. The programme will host an annual conference which will bring potential doctoral candidates into contact with training partners, local and international funding agencies, motivational speakers, sponsors and potential employers. The conference will therefore provide participating organisations with marketing, recruitment and networking opportunities.

### Vision

A strong, diverse and resilient qualified professional base for the South African public and private sector.

### Mission

A five-fold increase in the annual production of quality PhDs by 2025.

### Objectives

- Increase the number of qualified South Africans for critical positions in academia, the public service and the private sector.
- Provide a hub for nurturing peer and mentor support networks for potential PhD candidates.
- Increase the number and diversity of role models and mentors.
- Contribute towards developing a more equitable private and public sector workforce to service a diversified customer base.
- Foster collaborative private public partnerships for human capital development in South Africa.

Three main avenues are being pursued to increase the annual production of PhDs from 1 200 (approximate 2005 numbers), to 6 000 PhDs by 2025:

1. Full-time studies at South African higher education institutions under the supervision of locally based research leaders.
2. Full-time studies at international universities.
3. Full-time studies through sandwich programmes in which doctoral students are registered at South African universities but also spend up to a year of their research training period at an international research or higher education institution.

The *SA PhD Project* has the DST’s support and further partnerships will be forged with other government departments, higher education institutions, funding agencies, foundations, Science Councils, private industry and other organisations.

## Conclusion

With the approval of the NRF Board obtained, we will enter a crucial phase of developing the long-term Implementation Plans as indicated in Figure 2 on page 10.

These plans should serve to provide coherence across the organisation in achieving its strategic goals.

Human capacity development, institutional (research) support, research excellence and national relevance will feature large in these plans as shown in Figure 3 on page 12.

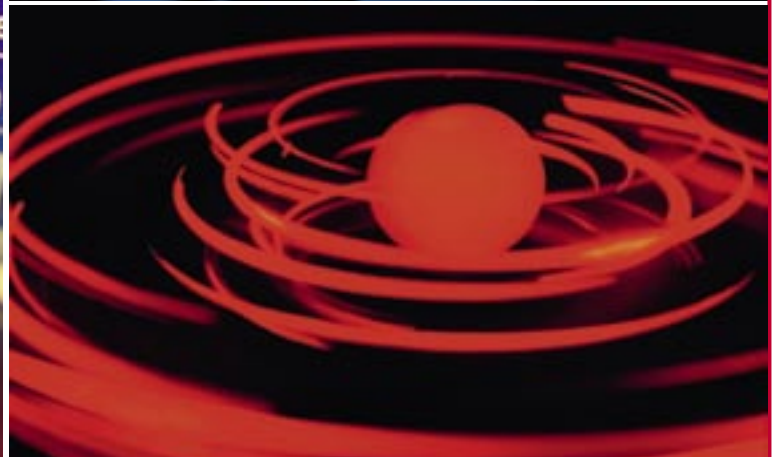
In the coming months, we will publish these plans for comment on our website. The organisation's executive management will vigorously drive a concurrent process of raising the necessary financial resources from public and private sources to facilitate these plans.

We look forward to an exciting period of interaction with all our stakeholders. We eagerly anticipate healthy and productive interactions with our future generation of scholars and scientists – and future Nobel laureates!

### Five-point plan:

1. Internationally competitive science, technology and innovation system
2. Representative research and technical workforce in SA
3. World-class science benchmarking and grant systems
4. Leading edge research, technology and innovation platforms
5. Vibrant national science system

**The NRF will encourage and promote cross-fertilisation and rotation of expertise and talent between itself and other entities in the national science system.**



## Selection of documents consulted:

- "Quo Vadis NRF" (2007)
- OECD Review of the South African NSI (2007)
- DST 10 Year Plan for Innovation (2007)
- Various international S&T policies

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# NRF National Research Foundation



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We look forward to constructive dialogue with individual stakeholders and partners as we continue to grow a vibrant national science system.



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