

Annual Report

NATIONAL ADVISORY COUNCIL ON INNOVATION • 2003-2004



NATIONAL ADVISORY COUNCIL ON INNOVATION

The National Advisory Council on Innovation

- In 1996, the *White Paper on Science and Technology: Towards the 21st Century* recommended the establishment of the National Advisory Council on Innovation (NACI) “charged with carrying out enquiries, and consultations with respect to the functioning of our national system of innovation, as requested by the Minister”.
- NACI was established by the National Advisory Council on Innovation Act (Act No. 55 of 1997).
- First NACI Councillors appointed in October 1998.
- The first formal Council meeting of NACI took place on 13 April 1999.
- NACI mission: “To become a relevant, prominent, credible, proactive and responsive advisory body to the Minister on national matters concerning innovation, science and technology, thereby contributing to the achievements of the national objectives of South Africa. NACI will give effect to its mission by utilising accountable scientific approaches and the best available resources.”
- NACI motto: “Innovation for a better future.” The motto is based on the empirically well-established relationship between innovation, economic growth and the quality of life of people.



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Members of Council: April 2003 – March 2004

Prof. Calie Pistorius

Vice-Chancellor and Principal:
University of Pretoria
Appointed Chair: March 2004

Dr Sibusiso Sibisi

President and CEO: CSIR
Chair: November 2003 – February 2004

Prof. Roy Marcus

Chairman: Da Vinci Institute of
Technology Management
Chair: April – October 2003

Dr Rob Adam

Director-General: Department of
Science and Technology
Chief Executive Officer

Ms Luci Abrahams

Director: LINK Centre, University of
the Witwatersrand
Executive committee

Dr Percy Amoils

Ophthalmic Surgeon, Inventor
and Businessman

Prof. Ahmed Bawa

Programme Officer for Higher
Education: Ford Foundation

Mr Alan Hirsch

Chief Director: President's Office
Executive committee

Prof. Dave Kaplan

Director: Science and Technology
Research Centre, University of
Cape Town

Mr Louis Kriel

Executive Chairman: Vinfruco

Dr Steve Lennon

Executive Director:
Resources and Strategy, Eskom

Prof. Malegapuru Makgoba

Vice-Chancellor and Principal:
University of Natal
Resigned May 2003

Ms Bongiwe Njobe

Director-General: Department
of Agriculture

Dr Adi Paterson

Chief Operating Officer:
Department of Science and Technology
Executive committee

Prof. Mapule Ramashala

Vice-Chancellor and Principal: Medical
University of Southern Africa

Mr Geoff Rothschild

Director: Corporate Marketing and Communications,
Johannesburg Stock Exchange

Mr Thero Setiloane

General Manager:
Marketing Department, Anglo Gold

Dr John Stewart

Consultant: Mining Industry and Technology
Management

Prof. Jennifer Thomson

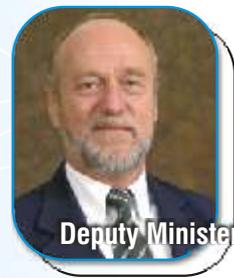
Department of Molecular and Cell Biology,
University of Cape Town

Mr Craig Venter

Chief Executive Officer:
Altech Group



Minister: Mr Mosibudi Mangena



Deputy Minister: Mr Derek Hanekom

Council Members



Back (l to r):

Geoff Rothschild; Louis Kriel; Thero Setiloane; Bongiwe Njobe; Calie Pistorius; Jennifer Thomson; Steve Lennon; John Stewart, Dave Kaplan; Alan Hirsch

Front (l to r):

Percy Amoils; Mapule Ramashala; Rob Adam; Roy Marcus; Luci Abrahams; Adi Paterson

Inserts:

Sibusiso Sibisi; Malegapuru Makgoba; Craig Venter; Ahmed Bawa

Message from the CEO, Dr Rob Adam

The NACI Council met for the first time on Robben Island in February 1999 for a planning meeting, and its first formal meeting took place in April 1999. The last meeting of the first Council took place in February 2004. The names of the members of the second Council were announced in March 2004.

The end of the first term of office of the NACI Council also coincided with the end of the first decade of democratic government in our country, and this allows one the opportunity to reflect on NACI's performance during this time. This annual report uses the developments in the national system of innovation (NSI) during South Africa's first decade of democracy as context, and it would be appropriate here to offer a few comments:

The first decade of the national system of innovation

The first decade of democracy can be characterised by the completion of the process of transforming the pre-1994 isolated science and technology system, which had been driven by self-sufficiency within narrow strategic objectives, to one driven by the needs of the country within a global economy. The past ten years have seen the development and implementation of the *White Paper on S&T*, the launching of strategies (such as that on biotechnology, the National R&D Strategy and the Advanced Manufacturing Strategy) and finally, at the end of the previous financial year, a new dispensation on the arrangement of the government science and technology institutions.

Within the context of developments such as these, NACI has established itself as a publicly visible advisory body on matters pertaining to innovation. This statement can be briefly substantiated in terms of the following four dimensions: its programme of priorities and outputs, its methodology of policy development, its involvement in the NSI and, finally, the nature of its infrastructure.

Priorities and outputs

NACI started its work in a modest way with a small budget and support structures, but confronted by a wide spectrum of potentially important issues to address. The consequence was that it had to be very selective in the issues on which it decided to develop

advice. A study of the outputs of the past four years shows that NACI has focused mainly on medium-range challenges, and has completed 11 initiatives. The outputs were in the form of reports, advice and website entries, to list but a few. Examples from the report year include issues such as human resources (three studies), the utilisation of research findings, and nine other initiatives.

Methodology

In the course of the past four years, NACI has developed an accountable methodology of evidence-based policy advice. The approach consists of sound prioritisation, operationalised scoping and terms of reference, peer-reviewed studies, exposure of the findings to relevant sections of the NSI and, finally, in-context conversion of findings into advice.

Involvement in the NSI

The past four years, and specifically the past year, have seen NACI systematically becoming more closely involved with the NSI in its various manifestations. This has been done through the engagement of external professional service providers, the soliciting of comments on discussion documents, national conferences, lunch seminars, regional seminars, newsletters, the NACI website, and presentations by members and the secretariat to national conferences.

Support

NACI started operations in 1999 with its infrastructural support consisting of a single official. Its current staff complement comprises five contract posts, which in the new financial year will be extended by three permanent posts when the Department of Science and Technology's Indicator programme is transferred to NACI. This small staff has rendered excellent service over the past year, often under considerable stress.

Words of appreciation

It should be clear from this brief overview that NACI has become established as a significant role player in a dynamically developing NSI. This has been the result of the inputs of a number of people, and it is a pleasure and a privilege to thank the following persons

Message from the CEO, Dr Rob Adam

and groups for their contribution to this success, especially during 2003:

- Dr Ben Ngubane, responsible Minister during 2003, whose enthusiasm for the work of NACI again served as a great inspiration.
- Dr Roy Marcus, Chairperson until October 2003: His enthusiasm for the cause of innovation in general, and NACI in particular, was always an inspiration throughout his term of office. He left a legacy that would stand NACI in good stead in the future.
- Dr Sibusiso Sibisi, Chairperson from November 2003 to the end of February 2004, for the way he led the first Council in wrapping up its work.
- Members of Council, who accepted the extension of their terms of office with the same enthusiasm as their original appointments and were indispensable in concluding the first term of office on such a productive note.
- Members of the secretariat for their unremitting commitment and professional support to all the initiatives of Council.

Dr Rob Adam
Chief Executive Officer



Dr Rob Adam

Introduction

The role of science and technology is so pervasive in all aspects of life, and the impact and consequences thereof – whether intentional or unintentional, direct or indirect – so vast, that one cannot imagine a modern government without an advisory body to which it can turn for advice on such matters. It is not surprising, therefore, that industrialised countries throughout the world, and in many developing countries, have advisory councils of one form or another to advise governments, heads of states, ministers and policy makers on science and technology. Given the important role of innovation, as opposed to science and technology *per se*, in improving the quality of life of a country's citizens and in creating wealth, many of these bodies also have a specific mission with regard to advice relating to innovation as well.

The South African White Paper on Science and Technology that was published in 1996, entitled *Preparing for the 21st Century*, emphasised the importance of innovation and its manifestation in the national system of innovation (NSI), and envisioned the National Advisory Council on Innovation (NACI) as a statutory body advising the Minister on various issues relating to South Africa's national system of innovation. NACI was subsequently established by an Act of Parliament in 1997.

It is important to recognise that innovation is not limited to scientific, engineering and technological prowess. Very often, the key to successful innovation lies in the social and human elements. It is therefore fitting that NACI should also concern itself with human capital challenges as they pertain to the NSI. These include the supply of and demand for knowledge workers, as well as aspects relating to the education of scientists, engineers, technologists and technicians.

The first councillors of NACI were appointed in 1998, and the Council was chaired by Dr Sibusiso Sibisi and later by Dr Roy Marcus (Dr Sibisi returned for a second period in office in November 2003). Early in 2004, a new group of councillors was appointed, with myself as chairperson. It is thus my privilege to write the chairperson's report, which is both a challenge and a pleasure. One is confronted with the fundamental question regarding the mission of NACI – have we met the expectations that Parliament had when NACI was established. This is a daunting question to respond to, especially when one has to report on the final year of the term of office of a Council. However, it is a pleasure to record the achievements of the year under review.

The dynamic balance between these two forces has been even more acute during the report year, given the fact that even while we were awaiting the appointment of a new Council, the existing Council realised that much of the work on the agenda of the first Council still had to be completed. This dilemma was resolved by the extension of the term of office of Council. The year 2003 proved to be a productive year for NACI – as this report will show – and the first Council was fortunate to sign off on almost all the initiatives approved in the course of its tenure.

This report covers the following main categories of activities in which the Council was engaged during the report year: advice developed, studies launched, communication, organisational arrangements, meetings, awards and challenges.

Evidence-based advice

Since its launch in February 1999, NACI has identified 23 issues on which to develop advice, commissioned 20 studies and, up to the end of March 2004, completed 17 of these; three issues were for various reasons not pursued beyond the initial scoping phase. In total, ten memoranda of advice were approved by Council for submission to government, while another three should be ready for consideration early in the next financial year.

Advice on the following issues was approved for submission to the Minister in the course of the report year 2003/2004.

- ***Mobility of R&D workers***

This advice was based on a study conducted by the Human Sciences Research Council (HSRC), in collaboration with the CSIR, entitled *Mobility of research workers*.

- ***The potential impact of skills shortages on the innovative capacity of the construction industry***

The study underpinning the advice was undertaken by the NACI secretariat and involved extensive consultation with stakeholders.

- ***Advanced Manufacturing and Logistics Technology Strategy***

The advice is based on a study involving extensive consultation with industry by the service provider, the CSIR. Government accepted the recommendations of the NACI and the first strategy was launched by the CSIR in September 2003. The implementation of the strategy is currently being managed by the Department of Science and Technology (DST).

Studies launched in 2003/2004

- ***A profile of postgraduate higher education and the academic research community in South Africa***

This study was undertaken at the request of the Minister to ascertain progress in making research resources and training in research accessible to previously disadvantaged sections of the research community. The study was commissioned to the University of the Western Cape. The report was circulated for comment to primary stakeholders, and it is expected that a memorandum of advice will be submitted in the next financial year.

- ***A policy framework for publicly funded intellectual property***

The subject of intellectual property rights was raised in NACI as early as 2000. In 2002, the first initiative entailed the establishment of the Intellectual Capital Forum, which affords all stakeholders space for the exchange of perspectives on this highly contested issue. In the latter half of the report year, NACI approved the drafting of a policy framework that would create an enabling environment for the promotion and protection of intellectual property generated by public funding. The draft report was completed at the end of the report year, and the final report is expected to be ready for consideration by Council in the latter half of 2004.

Communication

The imperative for a Council such as NACI to develop high quality, independent advice requires that it retains open communication channels with the rest of the NSI, including producers, converters and users of knowledge and its products. During 2003/2004, NACI has continued to do so in a range of ways:

Publications and reports

- *Annual Report – 2002*
- *Making research work for us: How South Africa uses knowledge for national development and business success* (An eight page main streaming publication based on the NACI discussion document, *The utilisation of research findings: Extent, dynamics and strategy.*)
- *Mobility of research workers* (Discussion document)
- *A profile of postgraduate higher education and the academic research community in South Africa* (Discussion document)
- *The potential impact of skills shortages on the innovative capacity of the construction industry* (Discussion document)
- *South African innovation: Key facts and figures 2004* (Discussion document)

National conference

NACI hosted a national conference on the utilisation of research findings on 8 and 9 October 2003. Presentations covered the main findings of the NACI study, utilisation policies of South African institutions, and international experience in this field. The keynote speaker was one of the top specialists in the field, namely Professor Barry Bozeman of the Georgia Institute of Technology, Atlanta. The conference was structured in such a way that feedback on the draft report could be generated. Approximately 120 delegates attended the two-day event, and most described it as a success.

NACI lunch seminar

A very stimulating lunch seminar was hosted in the course of the year. Professor Wesley Schrum of the State University of Louisiana addressed the gathering on some of the implications of globalisation for the research process.

Regional seminars

A truly national system of innovation will take the needs of the provinces into account in formulating innovation policy and strategy. One of the ways in which NACI is addressing this aspect is by means of regional seminars at which its work can be disseminated, on the one hand, and it can be informed of regional needs and initiatives on the other. Two successful regional seminars were organised

in the course of the year. The first one took place in Bloemfontein with Mr Webster Mfebe, MEC, as guest of honour, and the second one was hosted in Port Elizabeth. Both seminars were well attended and produced very useful interaction.

Participation in other conferences

A number of members presented papers at national and international conferences. It is encouraging to note that members of the secretariat made at least six contributions at national conferences and two at international conferences.

NACI Newsletter

One newsletter was published in the course of the year.

NACI website

The NACI website was revamped towards the end of the year. More than 600 000 hits were recorded during the report year. The fact that our website is visited frequently is encouraging, but the hit count could have been significantly higher had the quality of our innovation portal kept pace with progress in other NACI information systems. This issue will be addressed in the course of 2004.

International relations

Networking with international counterparts developed satisfactorily over the past year. Examples of the nature of our international liaison include the following: comments on selected discussion documents have on a number of occasions been solicited from international experts; one commissioned report was peer-reviewed by an international expert; information exchanges on content matters and best practice took place regularly; members of the secretariat attended three conferences abroad; and the NACI office received a number of delegations and scholars from abroad.

Organisational arrangements

The report year saw two important developments in the organisational structure of NACI, namely, the establishment of the SA Reference Group for Women in S&T as a permanent sub-committee of NACI, and the transfer of the Indicator Programme from DST to NACI.

South African Reference Group on Women in Science and Technology

When Cabinet approved the establishment of the South African Reference Group on Women in S&T (SARG) in early 2003, it specified that SARG would function as a an advisory committee of NACI. SARG was inaugurated in March 2003. Acknowledging the importance of the reference group required that careful attention be paid to its exact position vis-à-vis the Council. Considerable effort was spent in developing a management structure that would acknowledge the intentions of government to both complement the work of NACI and to optimise the role of SARG as a national advisory group.

SARG was engaged in several activities in the course of the year. One of its major achievements was the completion of a major study on the position of women in S&T. The report is expected to be released in 2004. Other activities are fully covered in the SARG annual report, available at www.sarg.org.za.

Indicator programme

In February 2004, Council accepted the offer of the Department of Science and Technology to transfer the DST Indicator Programme to NACI, since this would provide NACI directly with an essential instrument for assessing the overall state of the NSI. The transfer is scheduled to take place early in the new financial year (2004/2005).

Meetings

The full Council met twice, and the Executive Committee met three times. Four reference group meetings also took place.

Awards

As part of establishing the visibility of NACI in the NSI, NACI was involved in making three awards during 2003.

- ***NACI innovation award***

This award for outstanding postgraduate research with an innovation perspective was established in 2002. To broaden the context of the award, it was linked to the Acorn Technologies award scheme. At the same time, a second award was instituted, specifically to cater for candidates from formerly disadvantaged communities. Twenty-six submissions were received, and the winners in the

respective categories were:

- Ms Manju Joshua of the University of the Witwatersrand for her entry on the development of a safe and efficient bioreactor enabling heparin elimination prior to the return of blood to a patient during procedures such as kidney dialysis
- Mr Meshack Buthelezi of the Vaal Triangle Technikon for the development of an inexpensive analogue racing car game that works with light current and can thus operate on batteries or a transformer.
- ***Technology Top 100 innovation award***

For the second year in a row, NACI participated in the Technology Top 100 (TT100) innovation award competition. The NACI award is aimed at acknowledging outstanding innovations by companies. The winner of the NACI TT100 innovation award for 2003 was the Afrox Self-rescuing Division for the development of the chemical bed of the AfroxPac35.

Challenges

NACI's main challenge is to deliver on its primary mission, namely, providing advice to the Minister of Science and Technology on issues relating to the NSI. The advice may be requested by the Minister, or may be initiated by NACI itself. In order to provide the advice, NACI must be able to make informed opinions and translate those into a format that is useful for the Minister. NACI's role should not be confused with that of a science council, non-governmental organisation (NGO) or research organisation. It is also clear that NACI is not a line function or executive body. It is an advisory body, and must function as such. NACI will necessarily outsource some of its research, but ultimately the Council must make recommendations to the Minister.

The challenges that face NACI are two-pronged. On the one hand, NACI must ensure that it is structured so as best to serve its mission, while on the other hand, it must ensure that it prioritises the issues that it chooses to address. All of this must happen in an environment where best practice with regard to science and technology advice is given. Ultimately, the performance of NACI must be judged against the quality of advice that it provides to the Minister.

Chairperson's report

The issues that need to be addressed with regard to the NSI, can broadly be classified in four major themes, viz.

- Infrastructure for the promotion of innovation
- Human capital and the knowledge base
- Science, technology and innovation and its relation to competitiveness
- Social dimensions of innovation

All four of these themes encompass a number of dimensions which all capture elements of the broader challenges facing the National System of Innovation. They must be articulated and prioritised, and then addressed in earnest in order for NACI to successfully fulfil its mission of advising the Minister of Science and Technology.

Membership and staff

I would like to take this opportunity of thanking all the members of the first NACI Council, and particularly the previous chairpersons, Dr Sibusiso Sibisi and Dr Roy Marcus, for their hard work and dedication. Sincere thanks to all that have made the last year of the term of office yet another successful one. My thanks also go to the members that have not been re-appointed to Council – I trust that your experience in working in the policy space at national level will have been a reward in its own right and that you will capitalise on this experience in other contexts in which you will be working in future.

The new NACI Council looks forward to working with Minister Mangena, Minister of Science and Technology, in contributing to strengthening the South African national system of innovation.

Professor Calie Pistorius
Chairperson



Prof Calie Pistorius

2 April	Publication of <i>NACI Newsletter</i>	
16 April	Exploratory workshop: <i>Skills shortages</i>	Rosebank
23/24 April	IDRC-UNESCO conference: Evaluation of NSIs	Paris, France
24 April	NACI regional seminar	BMF, Bellville
23 May	Stakeholder workshop: <i>Skills shortages</i>	Rosebank
12 June	34th ExCo meeting	NACI
19 June	Workshop: <i>Skills shortage – best practices</i>	CSIR Conference Centre
26 June	ICF meeting	National Treasury
3 July	Reference group: Utilisation study	NACI
18 July	NACI lunch seminar: Professor Wesley Shrum	NACI
5 August	Utilisation workshop	NACI
7 August	Workshop: <i>Skills shortages – preliminary findings</i>	Rosebank
20 August	Presentation of utilisation findings to SAUVCA research committee	SAUVCA
5 September	NACI regional seminar	Bloemfontein
12 September	SARG: First Women in Science awards	Sandton
16 September	Final workshop: <i>The potential impact of skills shortages on the innovative capacity of major capital engineering projects</i>	
29 September	AMTS launch by Minister	Eskom, Midrand
9 – 10 October	Conference	CSIR
15 October	NACI postgraduate awards function	Eskom, Midrand
17 October	SSSS conference: <i>S&T and democracy building</i>	Breakwater, Cape Town
18 November	35th ExCo meeting	Atlanta, USA
4 December	16th Council meeting	NACI
5 February '04	36th ExCo meeting	NACI
5 March '04	NACI regional seminar	NACI
		Port Elizabeth

The National Advisory Council on Innovation was allocated R6,256 million by DST to perform its functions during the 2003/04 financial year. As in the previous financial year, the allocation is still integrated with the Department of Science and Technology, and all expenditure is still accounted for in the various financial systems of the Department. During the financial year, the allocation to the National Advisory Council on Innovation was adjusted to R5,472 million, with total expenditure of R5,458 million. The adjustment in the National Advisory Council on Innovation could be accommodated within the allocation, because funds were saved mainly as a result of vacancies that could not be filled during the financial year. An amount of R784 000 was moved. (Virement was applied in terms of Section 43 of the Public Finance Management Act (Act No. 1 of 1999) for utilisation within other programmes of the Department.)

National Advisory Council On Innovation: Budget Versus Expenditure

For the year ended 31 March 2004

	2003/04						2002/03	
	Adjusted Appropriation R	Virement R	Revised Allocation R	Actual Expenditure R	Savings (Excess) R	Expenditure as % of revised allocation	Revised Allocation R	Actual Expenditure R
Current	6,231,000.00	(759,000.00)	5,472,000.00	5,458,315.18	13,684.82	99.75	6,845,163.16	6,845,163.16
Capital	25,000.00	(25,000.00)	-	-	-	-	5,064.60	5,064.60
Total	6,256,000.00	(784,000.00)	5,472,000.00	5,458,315.18	13,684.82	99.75	6,845,163.16	6,845,163.16

Economic classification	2003/04						2002/03	
	Adjusted Appropriation R	Virement R	Revised Allocation R	Actual Expenditure R	Savings (Excess) R	Expenditure as % of revised allocation	Revised Allocation R	Actual Expenditure R
Current	1,647,000.00	(739,078.01)	907,921.99	895,781.29	12,140.70	98.66	8,778.00	8,778.00
Personnel	1,647,000.00	(739,078.01)	907,921.99	895,781.29	12,140.70	98.66	8,778.00	8,778.00
Transfer payments	-	-	-	-	-	-	25,536.00	25,536.00
Other	4,584,000.00	(19,921.99)	4,564,078.01	4,562,533.89	1,544.12	99.97	6,810,849.16	6,810,849.16
Capital	25,000.00	(25,000.00)	-	-	-	-	5,064.60	5,064.60
Transfer payments	-	-	-	-	-	-	-	-
Acquisition of capital assets	25,000.00	(25,000.00)	-	-	-	-	5,064.60	5,064.60
Total	6,256,000.00	(784,000.00)	5,472,000.00	5,458,315.18	13,684.82	99.75	6,850,227.76	6,850,227.76

Standard item classification	2003/04						2002/03	
	Adjusted Appropriation R	Virement R	Revised Allocation R	Actual Expenditure R	Savings (Excess) R	Expenditure as % of revised allocation	Revised Allocation R	Actual Expenditure R
Personnel	1,647,000.00	(739,078.01)	907,921.99	895,781.29	12,140.70	98.66	8,778.00	8,778.00
Administration	336,000.00	2,102.61	338,102.61	338,102.61	-	100.00	389,115.70	389,115.70
Inventories	92,000.00	-	92,000.00	91,971.03	28.97	99.97	42,681.67	42,681.67
Equipment	50,000.00	(47,024.60)	2,975.40	2,975.40	0.00	100.00	5,064.60	5,064.60
Professional and special services	4,130,000.00	-	4,130,000.00	4,129,463.85	536.15	99.99	6,379,051.79	6,379,051.79
Transfer payments	-	-	-	-	-	-	25,536.00	25,536.00
Miscellaneous	1,000.00	-	1,000.00	21.00	979.00	2.10	-	-
Total	6,256,000.00	(784,000.00)	5,472,000.00	5,458,315.18	13,684.82	99.75	6,850,227.76	6,850,227.76

Attainment of Corporate Goals – 2003

The *Corporate Business Plan – 2003* (CBP) served as the core planning guide for the work of NACI during the report year. The CBP charted the goals and schedules for the report year, but as such also represented a distillation of the direction that NACI had taken since its inception. The following table offers a summary of the targets that can meaningfully be quantified, and the extent to which they were attained.

Outcome	Type of output						
	Researched advice	Reports	Conferences and seminars	Website hits (thousands)	Circulation	Media coverage (thousands)	Awards
Target	6	6	5	500	5	±3	3
Result	3	6	4	600	4	±3	3

The table shows that quantitatively NACI met or came close to meeting all but one of its targets for 2003. The shortfall in the researched advice category resulted from two studies that required significantly more consultation with stakeholders than originally anticipated, and one study that was converted to an internal reference document.

The following qualitative evaluations of NACI's performance can be offered:

- Good progress was made in the establishment of an evidence-based policy development methodology (which entailed extensive literature surveys, international contacts and explication of internal processes)
- Project management skills were further developed (for example, through the attendance of courses, the meeting of deadlines and improvement in the project management schedule)
- Good progress was made in promoting positive perceptions of NACI (as shown by spontaneous contact by members of the NSI, international enquiries and feedback from the community on NACI enquiries).

All in all, the degree of goal attainment in 2003 can be described as a very satisfactory conclusion of the term of office of the first Council, and as a launching pad for the second Council.

	Initiated	Report	Outcome
Growth and innovation: Perspectives on the interaction between the economy, S&T and human capital	July 2000	July 2001	Advice
Promotion of an R&D culture in business	November 1999	Cancelled – changing priorities	
Trends in S&T	November 1999	Cancelled – scope unfeasible	
Open source software	October 2001	January 2002	Advice: April 2002
Competitiveness	December 2001	In progress	
11 September 2001: Implications for the NSI	November 2001	March 2002	Advice: April 2002
R&D in ICT	October 2001	Transferred to DST	
Innovation in IT	October 2001	Transferred to DST	
NACI performance audit	February 2002	October 2002	Advice: August 2003
Audit of the implementation of the innovation policy	February 2002	February 2003	Draft advice
Utilisation of research findings	February 2002	May 2003	Draft advice
Mobility of R&D workers	February 2002	January 2003	Advice: June 2004
Tax incentives	February 2002	In progress	

Portfolio of NACI studies: 1999 - 2004

Database of innovation databases	February 2002	February 2003	Website
Product design strategy	March 2002	October 2002	Advice: February 2003
Audit of SETI reviews	March 2002	August 2002	Internal reference
S&T facts and figures	March 2002	July 2002	Advice: June 2003
Advanced manufacturing and logistics strategy	May 2002	March 2003	Advice: Sept 2003
AWACS: Medium-term scenarios	May 2002	April 2003	Internal reference
Potential impact of skills shortages on innovative capacity	February 2003	October 2003	Advice: June 2004
Profile of postgraduate HE and the academic research community	April 2003	January 2004	Advice being drafted
Optimising the role of S&T within the context of NEPAD	February 2003	January 2004	Internal reference
Innovation facts and figures	March 2003	October 2003	Draft advice
Policy approach to publicly funded IPR	October 2004	July 2004	Forthcoming
Provincial innovation systems	February 2004		New study
NSI after the first decade of democracy	February 2004		New study
Appropriate human resources for the NSI	February 2004		New study

The South African Reference Group on Women in Science and Technology

The South African Reference Group on Women in Science and Technology (SARG) was approved by Cabinet in February 2003 as a permanent sub-committee of NACI. SARG was inaugurated in March that year. The main objective of SARG is to promote gender mainstreaming in science, engineering, technology and innovation.

The terms of reference of SARG include:

- Collaboration with NACI in promoting engendered research agendas and the position and role of women in the NSI
- Advising the Minister of Science and Technology on developing mechanisms that will increase the participation and contribution of women in SET
- Endorsing women role models in S&T
- Monitoring progress in gender mainstreaming.

The 18 reference group members were appointed by the Minister for the three-year period 2002 – 2005. The chairperson is Ms Luci Abrahams. The group consists of five experts from prominent international organisations and 13 South Africans (60% scientists and researchers, 20% business people and 20% gender specialists). Four members of NACI serve on the reference group.

In January 2003, SARG commissioned the study *Facing the facts: Women's participation in science, engineering and technology in South Africa*. The aims were:

- To develop a gender-disaggregated profile of the human resources for SET in the public science system in South Africa, in order to establish the status of women in science
- To explore the nature and extent of the contribution research has made towards understanding the specific needs and problems of women in general, namely the potential benefits of science for women.



Ms Luci Abrahams

The study, completed in February 2004, illustrates that the area that requires the greatest attention is the development of substantial numbers of women graduates in the natural sciences and engineering over the next twenty years. The main findings will be published on the internet at www.sarg.org.za.

Implementation of the Advanced Manufacturing Technology Strategy

The South African government has identified both innovation and the application of advanced manufacturing technologies as key drivers of economic development. This is borne out by two national strategy documents – the *National Research and Development Strategy* (NRDS) initiated by the DST, and the *Integrated Manufacturing Strategy* (IMS) driven by **the dti**. To underpin this and stimulate investment in key technologies, NACI commissioned the development of an *Advanced Manufacturing Technology Strategy* (AMTS), which was approved by government and launched in September 2003.

The AMTS Implementation Unit (AMTS-IU) was established with DST funding, and housed at the CSIR. This strategy, directed at market demand-driven and technological innovation-led growth and development, has prioritised five high impact sectors leveraging specific technology domains, such as ICT, advanced materials, products and process technologies. Interventions are to be implemented through innovation networks, innovation centres and specific projects.

The AMTS-IU embarked on the development of sector-specific strategies, which now form the basis for continuing interaction with industry, labour and academia, with a view to forming networks or centres of innovation as the collaboration platform. The aerospace industry, being one of the prioritised sectors, produced **A Strategy for a Sustainable, Economical and Growing Aerospace Industry** (ASSEGAI), and the launch of this strategy is planned for October 2004.

One of the delivery channels of the AMTS is through existing and planned provincial economic development strategies, for example, the Western Cape includes an AMTS-driven Innovation Fund project aimed at establishing advanced manufacturing technology laboratories.

Human resource development forms the backbone of all AMTS initiatives. In pursuit of this objective, a joint Merseta/**dti** project has been undertaken with the purpose of identifying scarce skills in the sectors represented by the Merseta chambers and the aerospace sector.

Conference on the Utilisation of Research Findings, October 2003

The utilisation of research findings is a critical hinge in the cross-over between research and socially relevant contributions to society; an essential link in the innovation chain; part of technology transfer; and an issue on the international S&T policy agenda.

Having completed a draft report on this topic in July 2003, NACI hosted a successful conference in October with the purpose of:

- Disseminating and testing the findings
- Surveying the wider context of utilisation
- Promoting participation in evolving strategies emanating from the study.

Sixteen papers were presented, including the keynote address by Professor Barry Bozeman (Georgia Institute of Technology), a prominent expert in research utilisation and technology transfer. Other speakers included leaders in the field of S&T in government, higher education and business.

Syndicate sessions generated very useful feedback on the report. The conference drew 140 delegates from all over South Africa and three delegates from Namibia. The conference can be considered a success, given the attendance figures, the quality of the papers, the extent of feedback from the floor and the group discussions. It produced a wide range of inputs, which were considered in finalising the report and the advice emanating from it.



**Dr Roy Marcus &
Dr Bernie Fanarhoff**



**Prof Bozeman &
Dr J Stewart**



**Dr A Kaniki &
Prof A Pouris**

Intellectual Property Rights and Public Funded Research

In 2002, public discourse in the domain of IPR and innovation increased considerably with the formalisation of the NACI Intellectual Capital Forum (ICF). This forum was initiated to create dialogue among stakeholders (in government, business, higher education, science councils and elsewhere) in the policy environment primarily to discuss key issues in the public-funded research and innovation environment.

The work of the NACI ICF has continued with good momentum over the past year. The last ICF in April 2003 focused on pursuing linkages at institutional level, and the need for capacity building programmes to ensure that institutions meet minimum requirements in the area of intellectual property (IP) (which are benchmarked against international institutional best practise). Sixty delegates attended the session.

Other stakeholder efforts during 2003 involved presenting and participating at a SARIMA conference and making an input on their capacity building initiative, at the MRC international conference held in Cape Town, and presenting at the dti CIPRO EPO conference for Africa and the Middle East on the topic of IPR and innovation support.

Given NACI's stakeholder relations and policy mandate, a *Draft Developing Country Approach for IPR Public Funded Research in South Africa* was initiated towards the middle of the report year. Good progress has been made with the drafting of a discussion document, which is expected to be ready for consideration by NACI in September 2004.

Expenditure on R&D as a percentage of GDP over time

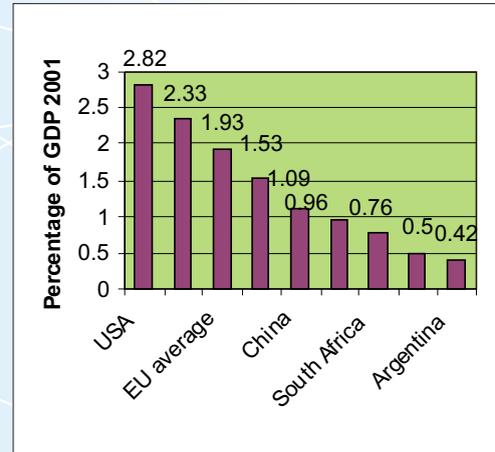
1991: 1.04% • 1993: 0.747%
 1997: 0.68% • 2001: 0.76%
 Source: South African National R&D Survey

Percentage of firms engaged in different aspects of innovation

- Management innovation: 36%
- Reorganisation: 36%
- Marketing: 50%
- Business strategy: 62%

Source: Oerlemans, LAG et al. 2003 *Industrial innovation in South Africa*. Pretoria: UP.

International comparisons of GERD



Source: International Comparisons OECD (MSTI)

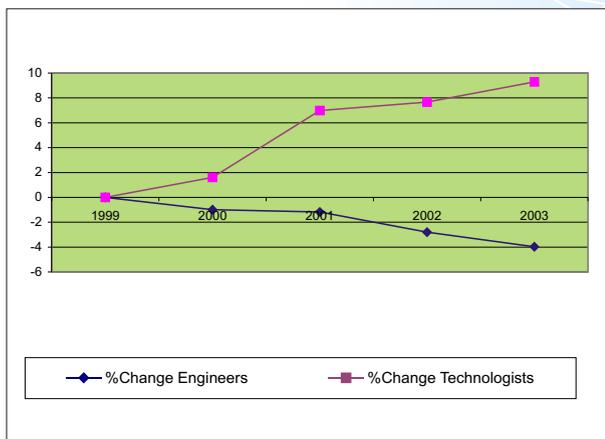
Provincial R&D expenditure

- Gauteng: 54% • Western Cape: 15%
- Free State: 10% • KwaZulu-Natal: 8%
- North West: 5% • Other four provinces: 8%

Source: R&D Survey 2001

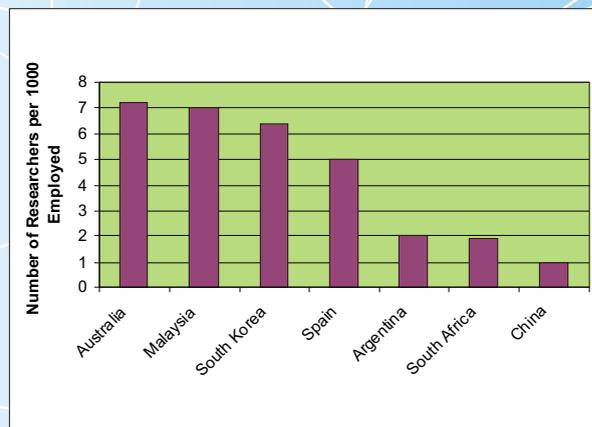
Size and dynamics of the South African NSI

Percentage change in the number of registered engineers and engineering technologists



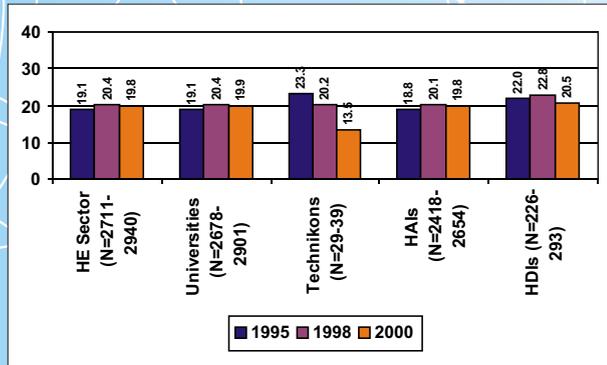
Source: Skills project (NACI, 2003)

Researchers per 1000 total employed in 2001



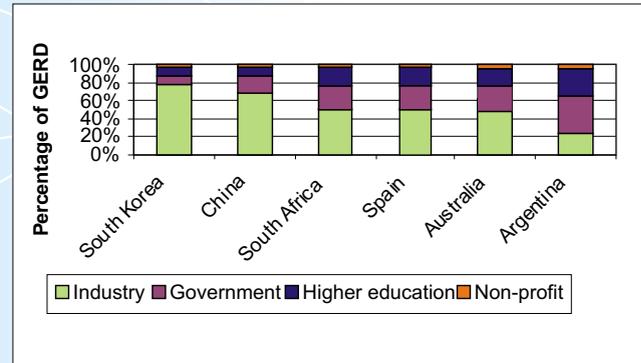
Source: R&D Survey 2001

Percentage of publications attributed to female authors



Source: Postgraduate Higher Education Report (NACI, 2004)

Performance of R&D by sector 2001



Source: R&D Survey 2001

Table 1: Innovation in partnership – percentages per type of foreign partner

Type of partner:	Not a partner	A partner and located in:					
		SADC ¹	Other African countries	Europe	North America	South America	Asia/Australia
Own group	32	2	1	53	8	2	2
Buyers	43	12	4	31	6	0	4
Suppliers	32	8	0	32	19	3	5
Competitors	61	18	0	15	1	0	4
Consultants	52	24	0	18	2	0	4
Research institutes	85	4	0	6	2	0	2
Universities	79	10	0	6	4	0	1
Other partners	75	1	0	15	5	0	3

Source: Oerlemans, LAG et al. 2003 *Industrial innovation in South Africa*. Pretoria: UP.

Size and dynamics of the South African NSI

Nature of R&D workforce

- Total R&D personnel (FTE): $\pm 35\ 000$
- Total FTE researchers: $\pm 8\ 700$
- Percentage female researchers: 35%
- Postgraduate students: $\pm 41\ 600$
- Researchers/1 000 labour force: 1.9
- R&D expenditure/researcher: $\pm R860\ 000$
- Involvement of postgraduate students in HE research projects: 33% in social sciences; 67% in natural sciences
- The percentage of women obtaining a PhD in engineering or engineering technology, rose from 0% in 1992 to 11% in 2001
- The HDI changed from 0.65 in 1975 to 0.68 in 1985, reached a high of 0.72 in 1995 and fell back to 0.7 in 2000
- Ratio of natural science and engineering graduates to all university graduates:

South Korea: 36%

Australia: 22%

Brazil: 21%

South Africa: 13%

The internationally acknowledged tool for measuring a country's performance in R&D is based on the so-called 'Frascati manual', adopted by the OECD in 1963 in the Italian town of that name.

The first South African R&D surveys date back to the late 1960s. Most of those early surveys were commissioned to the CSIR and HSRC. During the 1990s, the R&D surveys were commissioned to different contractors, but in 2002 DST commissioned the HSRC to undertake the R&D surveys over the following few years. NACI formally accepted responsibility for the management of the R&D surveys in March 2004.

A summary of high-level results from the 2001/02 survey was launched by the Minister at a media briefing on 15 January 2004 (selected findings from that report are reflected elsewhere in this report). In order to strengthen the time series data, surveys will in future be conducted on an annual basis, alternating between an 'R&D Lite' and 'R&D Full-bodied' format. Following a 2002 Cabinet decision, R&D survey data will become part of official national statistics through a process initiated with Statistics South Africa.

Innovation indicators

In various ways, the introduction of the concept of innovation into the realm of science and technology has broadened the scope of the field of S&T to the more inclusive model of national systems of innovation (NSI). South Africa was one of the first countries to redefine its S&T system as a national system of innovation in the *White Paper on S&T* of 1996. International developments in innovation indicators can be summarised as follows:

- The OECD first provided some international best practice in the form of the Oslo manual in 1992 as theoretical, conceptual and methodological framework for surveying technological innovation. A revised version is expected in 2005.
- Eurostat, in collaboration with the OECD, has since then been working on a core list of questions that permit comparable innovation surveys in Europe. The first Community Innovation Survey questionnaire was used in 1992, and the fourth questionnaire is planned for release in October 2004.
- Some developing countries followed suit. In the case of Latin America, this resulted in the Bogotá manual, published in 2000.
- South Africa has already established a modest track record in the measurement of innovation performance. Surveys were conducted in 1996 by the Foundation for Research Development (now the National Research Foundation) and in 2001 by the University of Pretoria. The third innovation survey is planned for 2005 and will be modeled on the Community Innovation Survey.

Date	Event
1997 October 1998	National Advisory Council on Innovation Act (Act No. 55 of 1997) promulgated First councillors appointed
1999	
February 13 April June September December	Full Council orientation meeting on Robben Island First Council meeting in Pretoria Chair accompanied Minister to OECD CSTP meeting Visits to the science councils (science vote) First reports considered by Council, namely, <i>Health research expenditure</i> and <i>Lack of skills in science and technology</i>
2000	
May December	Chair gave presentation at Commonwealth workshop in Pretoria on <i>The role NACI could play in developing strategies of innovation in South Africa</i> First workshop convened, entitled <i>The NSI in South Africa</i> . Mr J Mullin of Canada facilitated the proceedings
2001	
June October October August – September November November	Publication of NACI/NSTF <i>Growth and Innovation</i> report NSTF-NACI presentation on <i>Growth and Innovation</i> to parliamentary portfolio committee Launch of website (www.naci.org.za) Appointment of additional secretariat staff Approval of portfolio of eight studies Presentation on science and technology in the aftermath of 11 September 2001

'Firsts' in NACI's first term of office

Date	Event
November November December	Approval of database of service providers Publication of a brochure and a set of three posters Dr Sibisi resigned as chairperson of NACI, and Dr R Marcus was appointed as new chairperson
2002	
January January March March March April May July/August August 15 August September September September October October November	Open source document posted on the NACI website for public comment Release of <i>Growth and Innovation</i> CD Approval of first NACI business plan NACI delegation to SPRU conference in Sussex, UK Public seminar on <i>Key S&T facts and figures</i> Advice submitted on open software Workshop on <i>Competitiveness ranking system for South Africa</i> <i>First NACI Newsletter</i> NACI conference as part of World Summit on Sustainable Development <i>Key S&T facts and figures</i> published First regional seminar held in Nelspruit Review of the performance of NACI Colloquium on mobility study NACI conference on S&T in the NEPAD context NACI seminar on <i>Critical points at which the innovation process can be influenced</i> , presented by Professor Rip First TT100 NACI Innovation Award

Date	Event
2003	
February	Cabinet approval: SARG to be established as an advisory committee of NACI
February	First NACI postgraduate awards ceremony
March	NACI/NSTF cooperative agreement



Delegates at the Shrum seminar



Dr Roy Marcus addressing the Intellectual Capital Forum

Decade of democracy: Noteworthy S&T events

1994

- First democratic elections: 27 April 1994
- Inauguration of President Nelson Mandela: 10 May 1994
- Establishment of the Department of Arts, Culture, Science and Technology (DACST)
- Dr Ben Ngubane is appointed first Minister and Ms Winnie Mandela first Deputy Minister of Arts, Culture, Science and Technology. Mr WR Jardine is appointed first Director-General of DACST
- The National Science and Technology Forum (NSTF) succeeds the Science and Technology Working Group

1995

- Ms Bridget Mabandla succeeds Ms Mandela as Deputy Minister
- Establishment of the Parliamentary Committee for Science and Technology (MCST)
- Establishment of the Director-General's Committee for S&T (DGCST), a substructure of MCST
- Establishment of the Academy of Science of South Africa (ASSAf)
- The National Research and Technology Audit is initiated

1996

- The *Green Paper on Science and Technology* is published
- Mr Lionel Mtshali succeeds Dr Ngubane as Minister
- The Research and Technology Foresight study is launched on 28 June
- The *White Paper on Science and Technology* is published on 4 September
- The National Council for S&T (NACOST, now NACI) Bill is approved

1997

- The NACI Act (Act No. 55 of 1997) is passed
- The National Research Foundation (NRF) Bill is published

1998

- The report of the National Research and Technology Audit is submitted to DACST
- The first NACI Council is appointed, with Dr Sibusiso Sibisi as the first Chairperson
- Launch of the review of the structure, governance, and output of science councils
- Twelve sectors of the National Research and Technology Foresight study are published
- The NRF Act (Act No. 23 of 1998) is passed by Parliament in July
- South Africa obtains observer status at the OECD CSTP
- Establishment of the Innovation Fund, initially administered by DACST

1999

- Dr Ben Ngubane returns as Minister
- Dr Rob Adam becomes Director-General in September
- A full Council orientation meeting is held on Robben Island in February. The first formal meeting of the NACI Council takes place in April
- The NRF is established
- The Southern African Large Telescope (SALT) is launched

2001

- The Equipment Placement Programme is launched to address the deficit of equipment/technology infrastructure at SET institutions
- The Godisa Programme is established

2002

- The output of the National Research and Technology Foresight study is presented to President Thabo Mbeki in March
- The Africa Institute of South Africa (AISA) Act (Act No. 68 of 2001) is passed
- The Foundation for Engineering, Science and Technology (FEST) transferred to the NRF and subsequently renamed the South African Agency for Science and Technology Advancement

Decade of democracy: Noteworthy S&T events

2003

- Ms Buyelwa Sonjica, is appointed Deputy Minister in February
- The South Africa Reference Group on Women in S&T is established in March
- DACST is split into the Department of Science and Technology and the Department of Arts and Culture
- South Africa's National R&D Strategy is approved by government in August
- The AISA Council is appointed, with Professor Sibusiso Vil-Nkomo as the first chairperson
- Establishment of the first Biotechnology Regional Innovation Centres (BRICS)

2004

- Dr Ben Ngubane is appointed South African ambassador to Japan and Ms Mlambo-Ngcuka becomes Acting Minister in February
- Mr Mosibudi Mangena is appointed as Minister and Mr Derek Hanekom as Deputy Minister of Science and Technology on 29 April
- The 2001/2002 R&D Survey results are launched in Cape Town



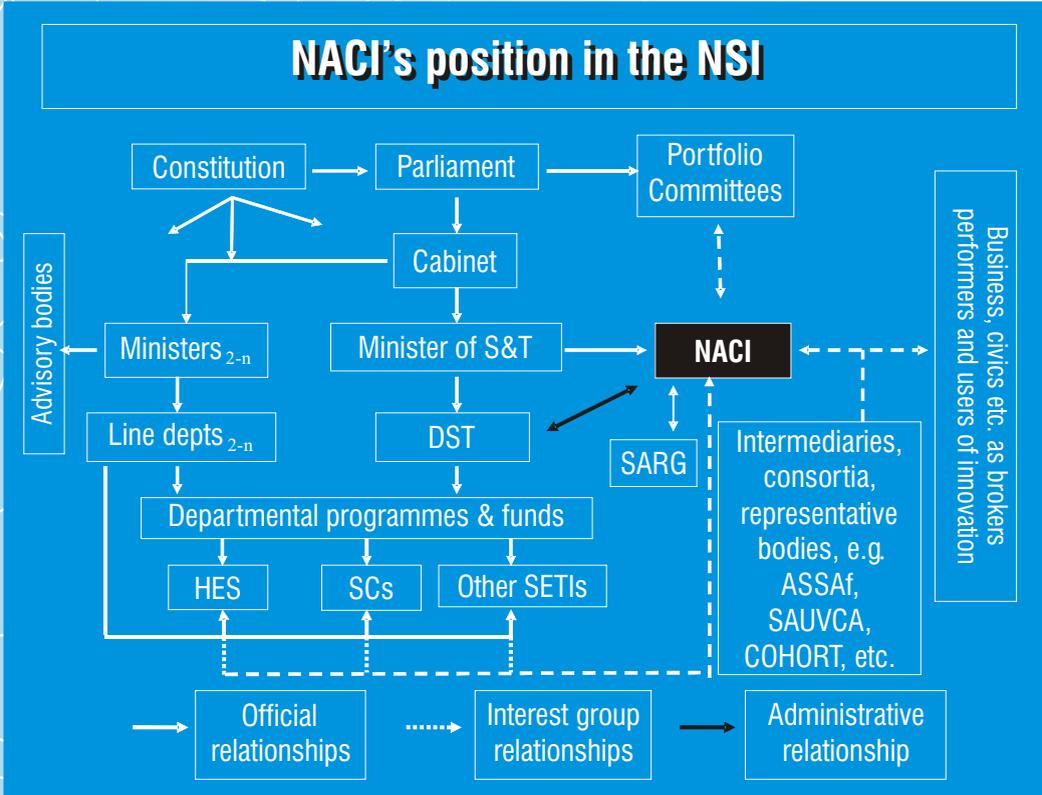
Minister: Dr Ben Ngubane

February 1999 - February 2004

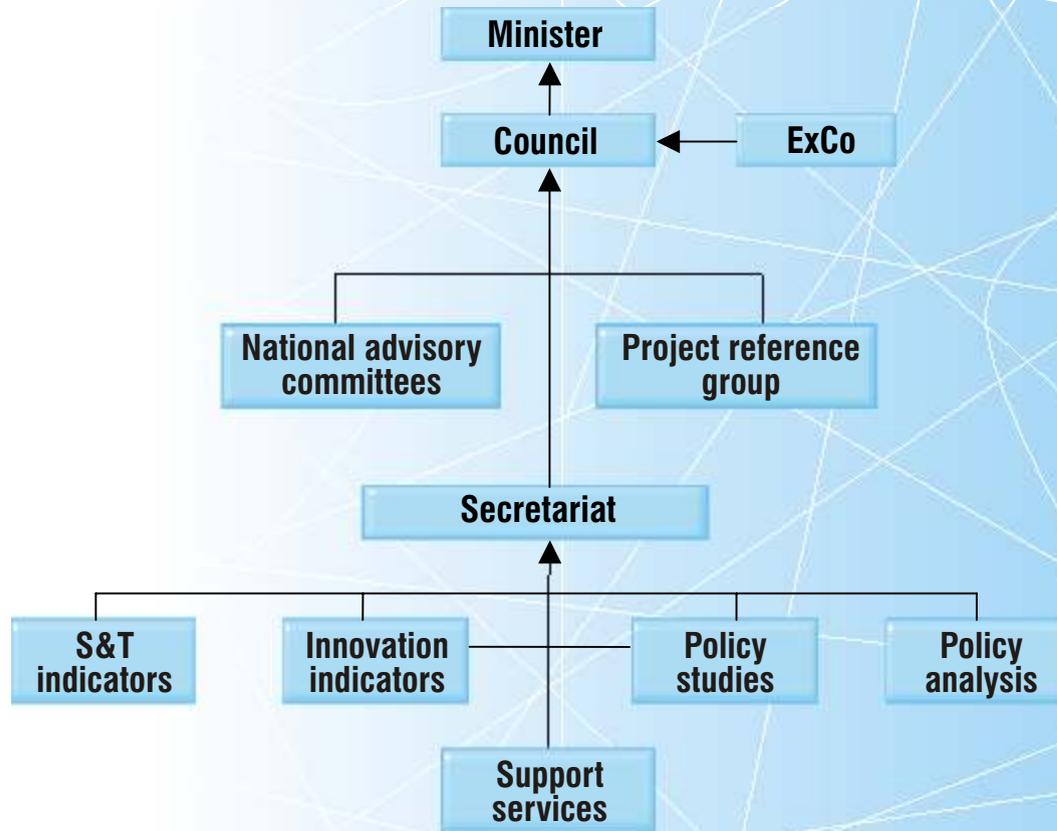


Acting Minister:
Ms Phumzile Mlambo-Ngcuka

February 2004 - April 2004



Organisational structure of NACI as approved in February 2004



Abstract of Annual Report – 2003 **National Advisory Council on Innovation**

The National Advisory Council on Innovation (NACI) is mandated to advise the Minister of Science and Technology on matters pertaining to innovation, science and technology. The report year, 1 April 2003 to 31 March 2004, was the fifth year since the establishment of NACI and the end of the term of office of the first Council. The Council began its work in a very modest way in 1999. Since then, NACI has grown steadily, as its outputs for the report year show, namely three ministerial advice submissions, five substantive reports on completed studies, the initiation and near completion of two new studies, five conferences and seminars and three national awards for innovation. All in all, NACI's perceived position and role in the national system of innovation (NSI) has grown over the past year. The Annual Report 2003 gives an overview of important developments in the NSI over the past decade, the size of the NSI, highlights of NACI's achievements over the past five years and details of its structure and functioning, activities, events and outputs. The full report is available on the NACI website, www.naci.org.za.

Opsomming van die jaarverslag: Annual Report – 2003 **Nasionale Adviesraad op Innovasie**

Die Nasionale Adviesraad op Innovasie (NACI) is getaak om die Minister van Wetenskap en Tegnologie oor sake rakende innovasie, wetenskap en tegnologie te adviseer. Die verslagjaar, 1 April 2003 tot 31 Maart 2004, was NACI se vyfde bestaansjaar en die einde van die termyn van die Eerste Raad. Die Raad het sy werksaamhede op 'n beskeie skaal in 1999 begin. Sedertdien het NACI deurlopend ontwikkel, soos die uitsette van die verslagjaar toon: Drie ministeriële adviesvoorleggings, vyf navorsingsverslae oor voltooide projekte, die inisiëring en byna-voltooiing van twee nuwe studies, vyf konferensies en seminare en drie nasionale toekennings vir innovasie. In die geheel gesien, het NACI se posisie en rol in die Nasionale Sisteem van Innovasie (NSI) oor die afgelope jaar gegroei. Die Annual Report 2003 bied 'n oorsig van belangrike ontwikkelinge gedurende die afgelope dekade, die omvang van die NSI, hoogtepunte uit NACI se prestasies oor die afgelope vyf jaar en, laastens, besonderhede oor sy struktuur, funksionering, werksaamhede, byeenkomste en uitsette. Die volledige jaarverslag is beskikbaar op NACI se webwerf: www.naci.org.za.

ISINDEBELE

Ihlathululo Lombiko Womnyaka - 2003

Umkhandlu Wenarha Yoke Oweluleka Ngezinto Ezitja

Umkhandlu Wenarha Yoke Oweluleka Ngezinto Ezitja (NACI) unikelwe umsebenzi wokwaluleka uNgqongqotjhe weSayensi neTheknoloji ngeendaba ezimayelana nezinto ezitja, zesayensi nezeTheknoloji. Umnyaka wombiko osukela ngelanga 1 Apreli 2003 uphele ngelanga 31 Matjhi 2004, bekumnyaka wesihlanu kusukela ngesikhathi sokwakhiwa kwe-NACI begodu nokuphela kwesikhathi sokusebenza soMkhandlu wokuthoma. Umkhandlu lo wathoma umsebenzi wawo kuhle ngomnyaka ka 1999. Ukusukela ngaleso isikhathi i-NACI ikhule kancani kancani njengoba umsebenzi wayo okumbiko womnyaka ukhombisa. Kuthunyelwe imitlolo yokwaluleka ungqongqotjhe emihlanu, kwaba nemitlolo ebanzi emihlanu ngefundo eyenziweko, kwathonywa bekwapheze kwaqedwa ukufunda okutjha okubili, imihlangano emikhulu namasemina amabili nokunikelwa kweziphokathathu mayelana nezinto ezitja. Sele kukoke, indawo ye-NACI eqatjangiweko nendima yayo kundlela yokwakha izinto ezitja enarheni yoke [national system of innovation] (NSI) ikhulile emnyakeni odlulileko. Umbiko womnyaka 2003 ubonisa kancazana ukuthuthuka okuqakathekileko ku-NSI eminyakeni elisumi edlulileko, ubungangani be-NSI, okuqakathekileko okuphuyelelwe yi-NSI eminyakeni emihlanu nemininigwane yokubumbeka nokusebenza kwayo, imisebenzi, okwenzakalako nemiphumela. Umbiko opeheleleko uyatholaka ku-website ye-NSI, www.naci.org.za.

SEPEDI

Kakaretšo ya Pego ya Ngwaga ka ngwaga - 2003

Khansela ya Bosetšhaba ya Keletšo ka Boithomelo

Khansela ya Bosetšhaba ya Keletšo ka Boithomelo (KBKB) e laelwa go eletša Tona ya Mahlale le Theknolotši ka ditaba tša go amana le boithomelo, mahlale le theknolotši. Ngwaga wa pego, 1 Aporele 2003 go fihla ka Matšhe 2004, e bile ngwaga wa bohloko go tloga mola KBKB e hlongwago le mafelelo a nako ya go ba mošomong ga Khansela ya mathomo. Khansela e thomile mošomo wa yona ka mokgwa wa go ikokobetša ka 1999. Go tloga nakong yeo, KBKB e gotše gannyane gannyane, ka ge ditšweletšo tša pego ya ngwaga di bontšha, ditlišo tše tharo tša keletšo ya tona, dipego tše hlano tše bohlokwa tša dinyakišišo tše phethilwego, go thoma le go nyaka go phethwa ga dinyakišišo tše pedi tše mpsha, dikhonferense tše hlano le diseminara le dikabo tše tharo tša bosetšhaba tša boithomelo. Ka moka moka, maemo ao a bonwago a KBKB le tema ya yona ka go tshepetšo ya bosetšhaba ya boithomelo (TBB) a gotše ngwageng wo o fetilego. Pego ya Ngwaga ka ngwaga 2003 e hlagiša kakaretšo ya ditšwelopele tše bohlokwa ka go TBB ngwagasomeng wo o fetilego, bogolo bja TBB, dintlha tše bohlokwa tša diphihlelelo tša KBKB mengwageng ye mehlano ye e fetilego le dintlha ka botlalo tša sebopogo le mešomo, ditiro, ditiragalo le ditšweletšo tša yona. Pego ka botlalo e hwetšagalala go weposaete ya KBKB, www.naci.org.za.

SESOTHO***Qotso ho tswa Pehelong ya Selemo le Selemo – 2003*****Khansele ya Naha ya Boeletsu ka tsa Boqapi**

Khansele ya Naha ya Boeletsu ka tsa Boqapi (National Advisory Council on Innovation - NACI) e fuwe mosebetsi wa ho eletsu Letona la Saense le Theknoloji ditabeng tse amanang le boqapi, saense le theknoloji. Pehelo ya selemong se fetileng, 1 Mmesa 2003 ho ya ho 31 Tlhakubele 2004, e ne e le ya selemo sa bohloko haesale ho thehwa NACI mme e le ho fela ha nako ya ho ba ofising ha Khansele ya ho qala. Khansele e qadile mosebetsi wa yona ka tsela e ikokobeditseng haholo ka 1999. Haesale ho tloha moo, NACI e ile ya hola ka mokgwa o sa fetoheng, mme ditlhaliso tsa yona bakeng sa pehelo ya selemo di bontsha, ditshisinyo tse tharo tsa ofising ya letona, dipehelo tse hlano tse fellelseng tsa diphuputso tse entsweng, qalo le ho ba boemong ba ho phethahatsa diphuputso tse pedi tse ntjha, dikhonferense le diseminara tse hlano le dikgau tse tharo tsa naha bakeng sa boqapi. Ka kakaretso, boemo bo bonahalang mmoho le seabo sa NACI ho mokgwatshebetso wa naha wa boqapi (National System of Innovation - NSI) ke dintho tse ileng tsa hola selemong se fetileng. Pehelo ya Selemo le Selemo 2003 e fana ka kakaretso ya dintho tsa bohlokwa tse etsahetseng ho NSI dilemong tse leshome tse fetileng, boholo ba NSI, dintho tsa bohlokwa haholo tse fihletseng ke NACI dilemong tse hlano tse fetileng le ditlha tsa sebopelo le tshebetso ya yona, diketsahalo le ditlhaliso. Pehelo e fellelseng e ya fumaneha ho websaete ya NACI, www.naci.org.za.

SETSWANA***Tshobokanyo ya Pego ya Ngwaga le Ngwaga - 2003*****Ya Lekgotla la Bosetshaba la Bogakolodi Kaga Botlhami**

Lekgotla la Bosetshaba la Bogakolodi Kaga Botlhami (NACI) le laetswe ke molao go gakolola Tona ya Saense le Thekenoloji malebang le dilo tse di amanang le botlhami, saense le thekenoloji. Ngwaga wa pego eno, eleng 1 April 2003 go ya go fitlha go 31 March 2004, e ne e le ngwaga wa botlhamo fa e sale ka NACI e tihongwa mme ebile e le bokhutlo jwa lobaka lwa tiro lwa Lekgotla la ntsha. Lekgotla leno le simolotse tiro ya lone e e seng kalokalo ka 1999. Fa esale go tloga ka nako eo, Lekgotla la NACI le ntse le gola ka iketlo, jaaka fa ditlhaliso tsa lone tsa ngwaga ono wa pego di bontsha, eleng dipegelo di le tharo tsa kgakololo e e filweng tona, dipego tse di tseeneletseng tse di malebang le dipatlisiso tse di konetsweng, go simololwa ga dipatlisiso tse diswa di le pedi tse di setseng di le gaufi le go konelwa, dikhonferense le diseminara di le tlhano mmogo le dikabelo di le tharo tsa bosetshaba tse di filweng Lekgotla leno ka ntsha ya botlhami. Ka kakaretso, tiro mmogo le seabe sa Lekgotla la NACI mo tsamaisong ya bosetshaba ya botlhami (NSI) di ile tsa gola mo ngwageng o o fetileng. Pego ya Ngwaga le Ngwaga 2003 e fa tshedimosetso ka kakaretso e e malebang le ditiragalo tsa botlhokwa tse di diragetseng go NSI mo dingwageng tse di lesome tse di fetileng, bogolo jwa NSI, ditlhakgolo tsa dilo tse fi fitlheletseng ke Lekgotla la NACI mo dingwageng tse tlhano tse di fetileng le ditlha ka botlalo tse di malebang le popego ya lone, kafa le dirang ka gone, ditiro tsa lone, ditiragalo mmogo le ditlhaliso. Pego ka botlalo e ka bonwa mo setsheng sa inthanete sa Lekgotla la NACI, eleng mo atereseng eno www.naci.org.za.

SISWATI

Sicaphuno Sembikomnyaka – 2003

Umkhandlu waVelonkhe wekweluleka kutekuSungula

Umkhandlu waVelonkhe wekweluleka kutekuSungula (iNACI) uniketwe ligunya lekweluleka iNdvuna yeTesayensi neTheknoloji etindzabeni letimayelana nekusungula, isayensi kanye netheknoloji. Umnyaka wekubika, 1 Apreli 2003 kuya ku 31 Mashi 2004, bekungumnyaka wesihlanu kusukela kwasungulwa iNACI futsi ngumnyaka wekugcina wekuphela kwesikhatsi semKhandlu wekucala. Lomkhandlu wacala umsebenzi wawo ngendlela yesimanje nga-1999. Kusukela lapho, iNACI iye yakhula, njengobe emagalelo ayo akhombisa kumnyaka wekubika, tefulo letintsatfu tekweluleka ehovisini lendvuna, imibiko lesihlanu lephelele ngetifundvo letiphetsiwe, kucala kanye nekuya ngasekupheleni kwetifundvo letimbili letisha, tinkhomfa letisihlanu kanye nemasemina nemiklomela lemitsatfu yavelonkhe yekusungula. Kuko konkhe, sikhundla seNACI kanye nemsebenzi eluhlelweni lwavelonkhe lwekusungula (NSI) undlondlobele kulomnyaka lophelele. Umbikomnyaka 2003 ubonisa ngetintfutuko letibalulekile kuNSI kulomyakalishumi londlulile, bukhulu beNSI, timphumelelo teNACI kuleminyaka lesihlanu lendlulile kanye nemininigwane yesakheko kanye nekusebenta kwayo, imisebenti, imisitfo kanye nemagalelo. Umbiko lophelele uyatfolakala kuwebhusayithi yeNACI website, www.naci.org.za.

TSHIVENDA

Tshipida tsha Muvhigo wa Nwaha nga nwaha – 2003

Khoro ya Ngeletshedzo ya Lushaka ya Tshanduko

Khoro ya Ngeletshedzo ya Lushaka ya Tshanduko (NACI) yo vhumelwa u eletshedza Vho-Minisita vha Saintsii na Thekholodzhi nga ha mafhungo ane a yelana na zwa tshanduko, saintsii na thekholodzhi. Nwaha wa u muvhigo, 1 Lambamai 2003 u swika 31 Thafamuhwe 2004, wo vha u nwaha wa vhutano u bva tshe NACI ya vhumbiwa na u fhela ha tshifhinga tsha u shuma tsha Khoro ya u thoma. Khoro yo thoma u shuma nga ndila ya u ditukufhadza nga 1999. U bva zwenezwo, NACI yo aluwa nga zwituku nga zwituku, sa izwi na zwibveledzwa zwayo zwi tshi khou vhonala kha nwaha wayo wa u vhiga, zwine zwa vha, milevho miraru ya ngeletshedzo dza minisita, mivhigo mitanu yo fhelelaho ya thodisiso dzo fhelaho, u thomiwa na u vha tsini na u fhela ha thodisiso dzinwe mbili ntswa, khuvhangano na ngudo thanu, na zwiphuga zwa lushaka zwiraru zwa tshanduko. Zwo fhelela, vhuimo vhune ha vhonala ha NACI na mushumo wayo kha sisiteme ya lushaka ya tshanduko (NSI) ho no aluwa u bva nwaha wo fhelaho. Muvhigo wa nwaha nga nwaha- 2003 u sumbedza mvelaphanda dza ndeme kha NSI dza minwaha ya fumi yo fhiraho, vuhulu ha NSI, zwithu zwa ndeme zwe NACI ya zwi kona kha minwaha mitanu yo fhiraho na zwidodombedzwa zwa tshivhumbeo na mishumo, nyito, zwiwo na zwibveledzwa zwayo. Muvhigo wo fhelelaho u a wanala kha webusayithi ya NACI, www.naci.org.za.

XHOSA***Amagqabantshintshi eNgxelo yoNyaka – 2003*****IKhansile yokweLuleka ngeNguquko kwibakala lesizwe (National Advisory Council on Innovation)**

IKhansile yokweLuleka ngeNguquko kuZwelonke (i-NACI) inikwe igunya lokunika iingcebiso kuMphathiswa wezeNzululwazi noBugcisa ngemicimbi ephathelene neenguquko, inzululwazi nobugcisa. Unyaka wengxelo, osuka ngomhla woku-1 kuEpreli 2003 ukuya kumhla wama-31 kuMatshi 2004, nongunyaka wesihlanu emva kokusekwa kwe-NACI kwanokuphela kwexesha le-ofisi lale Khansile yokuqala. Le Khansile umsebenzi wayo yawuqala ngendlela ehlonipheke kakhulu ngonyaka ka1999. Ukusuka ngoko i-NACI ikhule ngokuqinileyo, njengoko zibonisa ezi ziphumo zengxelo yabo yonyaka, nesingabalula kuzo ukungenisa iingcebiso ezintathu kumphathiswa, iingxelo ezintlanu eziyinene zezifundo esele ziqoshelisiwe, ukuqaliswa kwezimbini eseziza kuqosheliswa zona izifundo ezintsha. Iinkomfa neesemina ezintlanu kunye nokunikezelwa kwamabhaso amathathu abonisa inguquko nakwinqanaba leSizwe. Lilonke, indawo eboniswa yi-NACI kunye nomsebenzi wayo kwisixokelelwano seenguquko kwisizwe i-NSI sithe sakhula kulo nyaka udlulileyo. Le Ngxelo yoNyaka - ka2003 inika amagqabantshintshi ngezinto ezibalulekileyo zophuhliso kwi-NSI kule minyaka ilishumi idlulileyo, ubukhulu be-NSI, okubalulekileyo kwimpumelelo yeNACI kule minyaka mihlanu idlulileyo kunye neenkukacha zesakhiwo nokusebenza, imisebenzi, iziganeko kunye neziphumo. Ingxelo ezeleyo iyafumaneka kwi-website ye-Naci kule dilesi, www.naci.org.za.

XITSONGA***Nkomiso wa Xiviko xa Lembe - 2003******National Advisory Council on Innovation***

Khansile ya rixaka yo tshula (NACI) yi tholeriwe ku tsundzuxa Holobyе wa Sayense na Thekinoloji mayelana ni ku tshula, sayense na thekinoloji. Lembe ra xiviko lexi, ku nga ti 1 ta Dzivamisoko 2003 ku fikela ti 31 ta Nyenyankulu ta 2004, I lembe ra vunharhu NACI yi simekiwile xikan'we no gimeta ka theme ya hofisi ya khansile yo sungula. Khansile yi sungurile ntirho hi ndlela yo xiximeka hi 1999. Ku sukela nkarhi wolowo, NACI yi ndlandlamukile tani hilaha xiviko xa leswi endlwiweke xi kombisaka hakona. Yi fikelerile leswi landzelaka: yi humesile matsalwa yanharhu ya swiringanyeto yo tsundzuxa Holobyе, swiviko swa nthanu swa mindzavisiso leyi endlwiweke, ku sunguriwa no va kusuhi no hetwa ka mindzavisiso yintshwa yimbirhi, tikhonferense na tseminara swa nthanu xikan'we ni masagwadi manharhu ya rixaka ya vutshuri. Hi ku angarha hi nga kombisa leswaku, xiyimo xa NACI xikan'we ni ntirho wa yona eka sisiteme ya rixaka ya vutshuri (NSI) xi ndlandlamukile swinene eka lembe leri nga hundza. Xiviko xa Lembe - 2003 xi kombisa hinkwaswo swa nkoka leswi humeleleke eka NSI eka khume ra malembe lama nga hundza, sayizi ya NSI, leswi NACI yi swi fikeleleke eka nthanu wa malembe lama nga hundza xikan'we ni matirhele ni vuxokoxoko bya xivumbeko, migingiriko ni leswi fikeleriweke. Xiviko hi ku angarha xa kumeka eka websayiti ya NACI, ku nga www.naci.org.za.

ZULU

Isifingqo Sombiko Wonyaka - 2003

Umkhandlu Kazwelonke Wokweluleka Ngokuqamba Kabusha

Umkhandlu Kazwelonke Wokweluleka Ngokuqamba Kabusha (National Advisory Council on Innovation (NACI)) unikezwe igunya lokweluleka uNgqongqoshe Wezesayensi Nobuchwepheshe ngezindaba eziphathelele nokuqamba kabusha, nesayensi nobuchwepheshe. Unyaka wokubika, 1 Ephreli 2003 kuya ku-31 Mashi 2004, kwakungunyaka wesihlanu selokhu iNACI yenziwa kanye nokuphela kwesikhathi sokusebenza komkhandlu wokuqala. Umkhandlu waqala umsebenzi wawo ngendlela enesizotha kabi ngonyaka ka-1999. Kusukela lapho, iNACI ikhule kahle, njengoba imiphumela yombiko wonyaka ikhombisa. Kube nezethulo zeziphakamiso eziyizeluleko zikangqongqoshe ezintathu, imibiko emihlanu ezwakalayo ngocwaningo oluqedwe, ukuqalwa nokucishe kuqedwe olunye ucwaningo olusha, izingqungquthela ezinhlanu kanye nemihlangano exoxa ngezihloko ezithile kanye nemiklomelo kazwelonke emithathu yokuqamba kabusha. Selilonke, indawo neqhaza elicatshangwayo nge-NACI ohlelweni lukazwelonke lokuqamba kabusha (national system of innovation (NSI)) likhulile ngonyaka owedlule. Umbiko Wonyaka 2003 unikeza umqondo jikelele ngezinto ezenziwe ezibalulekile eminyakeni emihlanu, kanye neminingwane yohlelo nokusebenza kwayo, imisebenzi, izehlakalo kanye nemiphumela. Umbiko ophelile uyatholakala kuwebhsayithi yeNACI, www.naci.org.za.

Acronyms

AISA	Africa Institute of South Africa
AMTS	Advanced Manufacturing Technology Strategy
AMTS-IU	AMTS Implementation Unit
ASSAf	Academy of Science of South Africa
ASSEGAI	A Strategy for a Sustainable, Economical and Growing Aerospace Industry
AWACS	Airborne Warning and Control System
BRICS	Biotechnology Regional Innovation Centres
CBP	Corporate Business Plan
CEO	Chief executive officer
CIPRO	Companies and Intellectual Property Registration Office
CSIR	Council for Scientific and Industrial Research
CSTP	Committee for Scientific and Technological Policy
DACST	Department of Arts, Culture, Science and Technology
DGCST	Director-General's Committee for S&T
DST	Department of Science and Technology
DST	Department of Science and Technology
dti	Department of Trade and Industry
EPO	European Patent Office
FEST	Foundation for Education, Science and Technology
GDP	Gross domestic product
GERD	Gross expenditure on research and development
HDI	Historically disadvantaged institution
HE	Higher education
HSRC	Human Sciences Research Council
ICF	Intellectual Capital Forum
ICT	Information and communication technology
IDC	Industrial Development Corporation
IDRC	International Development Research Centre, Canada
IMS	Integrated Manufacturing Strategy

IP	Intellectual property
IPR	Intellectual property rights
MEC	Member of the Executive Committee
Merseta	Manufacturing, Engineering and Related Services Sector Education and Training Authority
MRC	Medical Research Council
MCST	Ministerial Committee for S&T
NACOST	National Council for S&T
NEPAD	New Partnership for Africa's Development
NRDS	National Research and Development Strategy (NRDS)
NSI	National System of Innovation
NSTF	National Science and Technology Forum
PhD	Doctor of philosophy
R&D	Research and development
S&T	Science and technology
S&T	Science and technology
SALT	South African Large Telescope
SARG	South African Reference Group on Women in Science and Technology
SARIMA	Southern African Research and Innovation Management Association
SAUVCA	South African Universities' Vice-Chancellors Association
SET	Science, engineering and technology
SETI	Science, engineering and technology institution
SPII	Support Programme for Industrial Innovation
SPRU	Science Policy Research Unit, UK
SSSS	Society for the Social Study of Science
UK	United Kingdom
UNESCO	United Nations Education, Scientific and Cultural Organisation
USA	United States of America

INNOVATION FOR A BETTER FUTURE

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Secretariat 2003/2004

The secretariat of NACI consisted of the following full-time contracted members of staff: Bok Marais, Mpho Mosarwa (until November 2003), Charlotte Mzolo, Deena Naidoo, Clement Ntshabele (until December 2003), Mokgwetsi Rakate and Ria Vogel; they were supported for limited periods by the following part-time staff members: Bhavini Kalan and Evan Benjafield.

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