












NACI ANNUAL REPORT 2016/17

Innovation for a better future

THE NACI COUNCIL (2014-2018)

The fourth NACI Council took office in September 2014 and its members are drawn from diverse backgrounds including the private sector, academia, science councils and government.

Chairperson		Acting CEO	
			
Prof. C. de la Rey	Dr M. Cele	Ms C. Busetti	Prof. R. Diab
			
Dr T. Dlamini (from March 2017)	Prof. A. Eberhard (from August 2014 to July 2016)	Prof. G. Gray	Dr A. Jammie
			
Mr M. Mkwazisi (from July 2016)	Dr S. Moephuli	Ms Z. Monnakgotla	Mr D. Naidoo



Mr K. Nassiep



Mr A. Ngcaba



Ms N. Nyembezi-Heita
(from August 2014 to
July 2016)



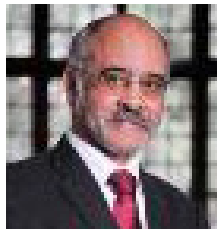
Mr S. O'Carroll
(from July 2016)



Dr M. Qhobela
(from November
2015)



Dr S. Sibisi
(Resigned August
2016)



Prof. C. Soudien



Mr P. Steenkamp



Mr G. Strachan



Prof. J. Thomson




Ms L. Zondo
(resigned November
2016)

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PART A: GENERAL INFORMATION

1. CHAIRPERSON'S OVERVIEW

On behalf of the National Advisory Council on Innovation (NACI), I am delighted to present the 2016/17 Annual Report. NACI remains an important actor in the National System of Innovation (NSI) and its mandate is to provide advice to the Minister of Science and Technology and, through the Minister, the Cabinet, on any matter related to science technology and innovation (STI). The annual STI indicators report informs NACI's advisory function, which is to generate advice proactively or in response to the Minister's request. The Minister requested advice on the performance analysis and situational analysis informing the NSI and draft new White Paper on STI. Proactively, NACI identified and provided advice to the Minister on (a) venture capital (b) issues of sustainable use of biomass, food security and (c) implementation of South Africa's bio-economy strategy.

The annual STI Indicators Report produced by NACI enables the council to provide a systemic view of what is being

done (including its efficacy), what needs to be done, and recommend steps to be undertaken to improve the STI policy performance. The 2016 STI indicators report will be made publicly available in September 2017.

The 2016 NACI STI indicators report identified areas of progress but also points to the lack of progress in certain areas of the NSI. First, the NSI human capital pipeline remains constrained. The percentage of matric learners who passed mathematics and physical science with at least 50% remains low. The proportion of matric female learners passing mathematics and physics with at least 60% has been declining from 2008 to 2016. Unsurprisingly then, the undergraduate percentage of Science Engineering and Technology (SET) enrolment has remained stagnant between 2005 (29.4%) and 2015 (29.7%). Notwithstanding, at the postgraduate level, the proportion of SET enrolment as percentage of total student enrolments has increased between 2005 and 2015.

Second, there has been notable progress in the expansion and transformation of research capacity. The percentage of female researchers (full time equivalent) increased from 2001/02 (38.4%) to 2014/15 (44.1%). The proportion of female academic staff with doctoral degrees increased between 2005 (30.4%) and 2014 (39.1%) and the proportion of black (African, Coloured and Indian) female academic staff also increased albeit slightly.

Third, the international benchmarking of mobile cellular subscriptions indicates that South Africa is doing well in diffusing ICT access through mobile cellular devices per 100 people. This is an important step if South Africa seizes the opportunities and benefits of digitization and the fourth industrial revolution or new production revolution.

Fourth, the R&D intensity or business expenditure on R&D in the agricultural sector increased from 0.29% in 2003/04 to 0.66% in 2014/15. This is welcomed, given the declining R&D intensity in manufacturing and other key industrial sectors on the one hand; and the importance of strengthening research and innovation related to food security on the other hand.

We hope that NSI stakeholders (including policy makers, the private sector and non-government organisations), and the public will find this 2016/17 Annual Report informative.

I take this opportunity to express my sincere gratitude to all the members of the NACI Council, as well as those who participated in our workings for their invaluable contribution to the work of NACI during the year.

My special appreciation to the Minister of Science and Technology, the Honourable Naledi Pandor, who set high expectations whilst providing consistent support for NACI activities.



Prof. Cheryl de la Rey

Chairperson: NACI

2. ACTING CEO'S REPORT

During the 2016/17 financial year, NACI produced a Strategic Plan (2016-2021) intended to enhance the quality, relevance and efficacy of advice; analytical capability; internal capacity to conduct systematic monitoring and evaluation and agenda and priority setting. It also intended to improve internal efficiencies, staff development, knowledge management and digitization of processes and systems.

Most pre-determined objectives were achieved during the 2015/16 financial year. Collaborations and strategic engagements (especially roundtable discussions) with NSI actors were critical in implementing the 2016/17 plan. These engagements informed and influenced the formal advice submitted to the Minister of Science and Technology. Roundtable discussions focused on the declining business investment in R&D as a proportion of Growth Domestic Product (GDP) and performance and situational analysis of NSI.

I would like to extend my sincere gratitude to the Minister, Chairperson, Council, Director General of the Department of Science and Technology for their leadership, support and guidance. Finally, I would like to thank my colleagues at the Secretariat for their contribution.



Dr Mlungisi Cele

Acting CEO: NACI

3. OFFICIAL SIGN-OFF

It is hereby certified that this Annual Report was developed by the management of the National Advisory Council on Innovation (NACI) under the guidance of the Acting Chief Executive Officer of NACI.

Prof. Cheryl de la Rey

NACI Chairperson



Ms Pretty Makukule

Chief Financial Officer (DST)



Dr Mlungisi Cele

Acting Head (NACI)



4. CORPORATE OVERVIEW

4.1 Mandate

NACI is mandated to advise the Minister of Science and Technology and, through the Minister, Cabinet, on the role and contribution of science, mathematics, innovation and technology, including indigenous technologies, in promoting and achieving national objectives, namely, to improve and sustain the quality of life of all South Africans, develop human resources for science and technology, build the economy, and strengthen the country's competitiveness in the international sphere.

4.2 Vision

A leading advisory body for government on science, technology and innovation within a well-coordinated, responsive and functioning national system of innovation

4.3 Mission

To provide evidence-based advice to the Minister of Science and Technology and, through the Minister, Cabinet, on science, technology and innovation matters, through research expertise and engagement with stakeholders.

4.4 Values

- Service excellence.
- Professionalism.
- Integrity.
- Respect and people-centredness.
- Transparency and accountability.

PART B: PERFORMANCE INFORMATION

5. ACTIVITIES, PERFORMANCE AND OUTPUTS 2016/17 FINANCIAL YEAR

The Council achieved its predetermined objectives for the financial year 2016/17. NACI's work fell into two broad categories. The first category involved activities aimed at responding to the Minister's requests. These included a performance analysis of the NSI, a situational analysis (identifying mega global and local trends), and the development of the National STI Data and Information Portal.

The Council successfully hosted a business symposium on research and development (R&D) investment and launched the 2016 STI Indicators Report in June 2016. It was also awarded the right to host the third Global Forum on National Advisory Councils, which will occur between 5 and 6 December 2017 at the CSIR International Convention Centre, Pretoria.

5.1 The performance analysis of the National System of Innovation (NSI)

As a sequel to the review of the 1996 White Paper on Science and Technolo-

gy (1996 White Paper), the performance analysis of the NSI was conducted and completed. The performance analysis sought to answer what worked and what did not work in implementing the 1996 White Paper. The performance analysis identifies areas of progress but also points to the lack of progress in certain areas of the NSI. Examples of progress included: First, the implementation of policy processes and instruments intended to shape the NSI, including the Research and Technology (R&T) Audit; R&T Foresight; National Research and Development Strategy (NRDS); Ten-Year Innovation Plan; Intellectual Property for Publicly Funded Research and Development and R&D Tax Incentive Scheme, with open borders promoted through the South Africa-European Union Agreement; Science and Technology Bilateral meetings; work with South African Development Community (SADC), New Partnership for Africa's Development (NEPAD), African Union and the Brazil Russia India China South Africa (BRICS).



Figure 1: Participants at the roundtable discussion on the performance of the NSI

Alongside came new organisations and organisational enhancements as in NACI; BRICs; Academy of Science of South Africa (ASSAf); the Innovation Fund; South African Research Chairs Initiative (SAR-ChI); Technology Innovation Agency (TIA); National Intellectual Property Management Office (NIPMO); South African

Council for Natural Scientific Professions, (SACNASP); Centres of Excellence and Centres of Competence; South African National Energy Development Institute (SANEDI) and South African National Space Agency (SANSA). This compendium of actions represents considerable policy experimentation and learning.



Figure 2: Participants at the roundtable discussion on the performance of the NSI

Second, there was an establishment, building and strengthening of NSI actors and institutions including the Department of Science and Technology (DST) and its entities, the National Research Foundation (NRF), SANSA and TIA, the South African National Research Network roll-out, the **Centre** for High Resolution Transmission Electron **Microscopy** at Nelson Mandela Metropolitan Municipality, centres of excellence and compe-

tence at various universities, a pilot plant to produce a foot-and-mouth disease vaccine, and facilities such as the Institute of Infectious Disease and Molecular Medicine at the University of Cape Town; the Doris Duke Medical Research Institute at the University of KwaZulu-Natal, the Wits Reproductive Health and HIV Institute, the Southern African Large Telescope, KAT-7 and the MeerKAT).

Third, the number of degrees awarded to African students has increased enormously and significant demographic shifts are occurring, though output is still short of employment equity goals. Fourth, the public funding for STI activities has risen substantially in real terms since 1994, with funding in 2014 almost double the level 20 years previously led by the DST, whose funding has increased 900% since 2005/06. This funding has been instrumental in maintaining the quality (in some cases the excellence) of the country's science and technology institutions, including its top universities and science councils.

Fifth, South Africa's research system has done relatively well in areas such as palaeontology, astronomy, mathematics, theoretical physics and health science, and has very strong international links to governmental and multilateral donors and philanthropists. In climate change, South Africa has a voice in the structures of the Intergovernmental Panel on Climate Change, showing international recognition of the country's expertise in the fields of ecology, environmental science, water resources and modelling.

Sixth, Public Sector Innovation has yielded positive results such as the development of a new portal for educator support, and online tax collection. These innovations are essentially non-technological in character, with their execution depending upon the supply of skills from higher education in general.

Seventh, space science and technology enjoy the successes associated with KAT-7 and the image produced by the first MeerKAT array release. These projects demonstrate significant local expertise in signal detection and processing, and speak to the resilience of the telemetry sectoral system of innovation. South Africa's capability in space science and technology contributed to successful bidding of the Square Kilometre Array, which was announced in May 2012 by the Square Kilometre Array Organisation. As a consequence, South Africa has attracted other radio astronomy initiatives from abroad, namely the C-Band All Sky Survey, or C-BASS, and PAPER, the Precision Array for Probing the Epoch of Reionization.

Lack of or limited progress included persistent systemic fragmentation and inadequate coordination; constrained human capital pipeline and skills shortage; declining performance of R&D and innovation by business, the stagnation of gross expenditure on R&D (GERD) relative to GDP at 0,73% in 2013/14, insufficient government support for private R&D, a policy mix overly focused on supply side instruments, slow growth in the high and medium technology sector, especially exports, and an overall lack of growth in innovation outputs such as patents.

5.2 Situational analysis surrounding NSI

The situational analysis report provides a deep, yet succinct, narrative of the global and domestic forces shaping our contemporary conjuncture. In developing such a historically contextualised account of the current situation, this analysis draws upon mixed social science methodologies from across the disciplines of anthropology, history, philosophy, political economy, and sociology.



Figure 3: Presenter at the roundtable discussion on the situational analysis surrounding NSI

The situational analysis notes that the post-apartheid Republic of South Africa was inaugurated in 1994 and heralded a rupture with centuries of mercantilism, colonialism, racial capitalism, and decades of internal colonialism (segregation and apartheid). The passage of twenty-years since the adoption of the 1996 White Paper on Science and Technology provides the vantage point whereupon this situational analysis is premised. The world is indeed a different place than what it was at the emergence of the new South Africa. It is thus necessary to revisit the epistemological influences on the 1996 White Paper on Science and Technology and update the empirically determined contextual factors that shaped its orientation and form.

The situational analysis report is complemented by detailed sets of key trends such as the bioeconomy and food security, climate change and energy, social cohesion, safety and security, space sciences, engineering and services, and water resources and sustainability and fourth industrial revolution. By way of example, fourth industrial revolution is elaborated below.

The Fourth Industrial Revolution: Managing Disruption

Evidence suggests that technological change provides a better explanation than globalization for the industrial decline and deteriorating labour-market prospects that have catalyzed anti-establishment voting in many of the world's advanced economies. Today's world is one in which production, mobility, communication, energy and other systems are changing with unprecedented speed and scope, disrupting everything from employment patterns to social relationships and geopolitical stability. Driven by the convergence between digital, biological and physical technologies, the Fourth Industrial Revolution is creating new global risks and exacerbating existing risks (NACI, 2017).

The Future of Work and Other Challenges Impacting Social Protection

The Fourth Industrial Revolution is fundamentally changing the ways that people work and live in three main ways. First, it is untethering some types of work from a physical location, making it easier to remotely connect workers in

one region or country to jobs in another – but also making it less clear which set of employment laws and taxes apply, creating greater global competition for workers, potentially weakening employment protections and draining public social protection coffers (NACI, 2017).

Second, human labour is being displaced by automation, robotics and artificial intelligence. Opinions differ on the extent of what is possible: Frey and Osborne's (2013) study found that 47% of US employment is at high risk of being automated over the next two decades. In general, lower-skilled workers are more likely to see their jobs disappear to automation, increasing their vulnerability and exacerbating societal inequality (NACI, 2017).

Third, the nature of the contract between employer and employee is changing, at the same time that the move to a sharing and collaborative economy increases the prevalence of jobs that fall outside the standard employment contract model. The shift has some positive implications for workers, as it potentially offers more control over when and whether to work and opportunities to

supplement their incomes – renting out a room through Airbnb, for example, or driving part-time for a service such as Uber (NACI, 2017).

But this shift also has negative implications: it means workers can expect more volatility in their earnings and leaves them without the employment protections enjoyed by “standard” employees. The rise of zero-hour contracts is one manifestation of this change. Some governments, such as the government of New Zealand, have already banned their use. New employment models also hinder the collection of taxes from both employer and worker, reducing the amount governments have available to fund social protections. These three transformations are coinciding with four seismic challenges. Demographic pressures are further straining formal and informal safety nets. The OECD expects old-age dependency ratios in member countries to double by 2075 as populations age and birth rates fall. Persistently low interest rates are eating into pension value and exacerbating the funding gap. Without supplements, increased life expectancy could see future generations' pensions reduced by almost half.

Fourth, mass migration of labour poses challenges for social protection. Migration is generally seen as a net economic positive. However, large and sudden inflows of people can put additional and unpredictable strain on social systems and resources.

Fifth, increasing levels of wealth and income inequality in many countries across the developed and developing world are putting even greater pressure on fragile or inadequate social protections, particularly for vulnerable lower-income groups. Inability to address these challenges adequately through social security systems could have explosive impacts on social stability (NACI, 2017).

5.3 The STI Data and Information Portal

A fully developed and functional STI data and information portal will play a critical role in enhancing the monitoring, evaluation and learning capability of the NSI. The first phase of developing the STI data and information portal was completed (www.naci.org.za/nstiip). This included the definition of user specifications and selection of an initial set of data and information derived from R&D Surveys and WIPO IP statistics. The STI data and information portal was demonstrated to technical stakeholders and government. Collaboration between NACI and NSI actors has been and will be vitally important to the sustainability and effectiveness of the STI data and information portal. To this extent, with the support of DST, various memoranda of understanding were entered into with NSI data sources.



Figure 4: Staff members involved in the development of the National STI Portal

5.4 The 2016 South African Science, Technology and Innovation Indicators Report

The annual report on the 2016 South African STI Indicators was generated. This publication is part of our contribution to building the monitoring, evaluation and learning capability necessary for assessing the health of the NSI.

The 2016 STI indicators report is based on the analysis of NSI performance during the period between 1996 and 2016. Coincidentally, government was leading a process of reviewing the current 1996 White Paper on Science and Technology and developing the new White Paper on STI. Therefore, the 2016 STI indicators report can provide necessary input into the current policy development process.



Figure 5: Minister Pandor launches the 2016 Indicators Report

5.5 Innovation Scorecard

On the 21 October 2016, NACI hosted a stakeholder consultation workshop on a framework for the development of an innovation scorecard for South Africa. The workshop was held at the Innovation Hub in Pretoria. The purpose of the workshop was to solicit stakeholder inputs and to obtain consensus on South African Innovation Scorecard Framework; both in terms of the indicators and proxies that need to be included for each selected component and their linkages.

Innovation must be tracked in order to achieve the set government objectives. The proposed South African Innovation Scorecard Framework is intended to enhance the monitoring of the innovation system by developing composite innovation indicators for South Africa. The scorecard has three pillars namely; enables, firm level activities and outputs.

Over the period 2010-2014, most enablers showed positive growth except for venture capital as a percentage of GDP which declined. New doctorates increased by 43% and scientific publi-

cations among the top 10% of the most cited publications worldwide as a percentage of the total scientific publications in the country increased by 16%.

Firm activities were mainly negative except for public private co-publications per million of the population which grew by 27%. Research and development expenditure in the business sector declined by 108%, although this figure has to be seen in the light of the 2008 economic situation. Lastly, outputs were mainly positive except for the contribution of exports in commercial services to total exports which declined by 3.8%. Licence and patent revenues from abroad as percentage of GDP grew by 51%.

The South African Innovation index 2010-2014 indicates 0,11 positive growth in total. The outputs were higher than the enables as the enabler variables were effectively translated into outputs. Firm activities, however, were negative. The scorecard was well received by delegates and a number of inputs were given on how to enhance it in future in order to reflect the broader NSI.

5.6 Government Support for a Venture Capital Fund

Venture Capital (VC) is a critical catalyst for innovation and entrepreneurship for the small, medium and micro enterprises (SMMEs). It addresses challenges facing seed and start-up entrepreneurs that are often neglected by other support instruments. VC also provides hands-on assistance through experienced fund managers.

Over the past decade, South Africa experienced very low levels of VC investment as a percentage of GDP. The ratio of private VC investment to public VC investment is very low. Access to funding for private sector VC managers in South Africa is extremely limited.

The Council conducted various stakeholder engagements in order to better understand the VC problem and identify solutions. Consequently, a number of recommendations were submitted to government.

5.7 Issues of sustainable use of Biomass, Food Security and Implementation of South Africa's Bioeconomy Strategy

The Council delivered three policy briefs to the Minister of Science and Technology. These policy briefs were related to (1) issues relating to the sustainable use of biomass in South Africa, (2) issues affecting food security in South Africa, and (3) the development of indicators to monitor the implementation of South Africa's bio-economy strategy. The policy briefs contained information such as data released by South African Weather Service (SAWS) in early 2016 showed that the drought that the country experienced in 2015 as a result of the El Niño effect was the worst experienced by South Africa ever since records began in 1904. This brought into sharp focus the fact that South Africa has to manage its water resources carefully in order to secure food security for its citizens. The policy brief on biomass showed that even though South Africa is a semi arid country, it might have more biomass than the estimates made before. The policy brief on the bioeconomy highlighted that fact that in order for the bioeconomy imple-

mentation to be successful, a number of changes would have to be made in order to accommodate the rapid technological developments that are occurring in this field.

5.8 Gender

Council synthesised previous work done on women and SET in order to inform drafting of the new white Paper on STI. Some of the proposed interventions included: Programmes to increase the number of women in the SET fields of study and in the SET workplace (this includes the technical fields from artisan, technician, technologist to engineers). This, the Council had put forward, that it could be achieved through targeted funding mechanisms to advance both affirmative action and women empowerment. The Council had suggested that the funding structures should take into consideration the 'life – cycle' of SET women researchers to ensure promotion throughout the various phases from postgraduate and postdoctoral studies; publication; research management, all the way up to achieving a research rating. The DST can perhaps evaluate the extent of progress in this area, taking into account what worked and what did not work.

Existing mechanisms for awarding researcher ratings and other scientific criteria that are critical to earning a status within the SET funding framework; must be reviewed and expanded to facilitate racial inclusion and empowerment of those who have been outside the system for prolonged periods. It is NACI's understanding that the NRF rating system has been reviewed, at least once before, but the extent to which the review intended to facilitate inclusion, is a question worth pursuing in the context of the envisaged new White Paper on STI.

Institutions in the STI, must put in place dedicated institutional programmes for leadership (including policy leadership) and mentorship, with a specific emphasis on racial inclusion and women empowerment. These type of programmes would require structure, clearly stated objectives, timelines and incentives for attracting mentors.

Funding mechanisms anticipated should include earmarked funding for programmes to develop disadvantaged groups in the country (e.g. women, people with disabilities, people living in conditions of abject poverty). The idea of

science for social impact in sync with the goals of a developmental state.

5.9 Hosting of Business Symposium on R&D Investment

The symposium was intended to understand and explore solutions to address the decline of business investment in R&D. A number of issues were raised including the following: First, all NSI actors should contribute towards efforts aimed at economic recovery and growth and improvement in the quality of life.

Second, partnership between public and private sectors was strongly emphasised. Identification of niche areas or priorities was seen as important in improving sustainable economic competitiveness.

Third, government needed to monitor and evaluate efficacy of its interventions (including incentives) continuously.

Fourth, government was encouraged to ensure holistic policy coherence and certainty.

Fifth, the private sector was encouraged to absorb more PhDs. Sixth, Higher Ed-

ucation Institutions were encouraged to balance development of specialist and generic graduates, partly to improve absorption of graduates by the private sector. Finally, it was agreed that there should be less talk and more action in addressing challenges facing the country and NSI.

5.10 The hosting of the Third Global Forum on National Advisory Councils in 2017

The Global Forum of National Advisory Councils is a meeting of top officials of Councils or equivalent institutions providing strategic STI policy advice to the highest public and private level in their countries of origin. NACI participated in the previous two meetings of the Global Forum on behalf of South Africa. The first

meeting was on 22-23 October 2015 in Chile; and was jointly organised by the government of Canada's Science, Technology and Innovation Council (STIC) and the National Council of Innovation for the Development of Chile (CNID). The second meeting was in Korea on 1-2 September 2016 and was jointly organised by the Korea Institution of Science and Technology Evaluation, Planning (KI-STEP), and CNID, and supported by the Presidential Advisory Council on Science and Technology (PACST).

At the inaugural meeting in Chile, it was proposed that NACI hosts the third meeting in South Africa in 2017. The meeting will be held on 5-6 December 2017 at the CSIR International Convention Centre, Pretoria.

5.11 Summary of NACI's Performance against Strategic Goals and Objective is outlined in Table 1 below:

Table 1: Performance against the NACI 2016/17 Annual Performance Plan

Output	Performance Indicator (s)	Original APP Annual Target	Amended target APP Target	Actual 2016/17 Performance	Comments/overall progress	Actions Taken
STI Advice	Number of STI advice submitted to the Minister of Science and Technology	3x STI Advice submitted to Minister of Science and Technology by 31 March 2017	2x STI Advice by 31 March 2017	Achieved	Advice focusing on issues related to venture capital, sustainable use of biomass in South Africa, food security in South Africa, and the development of indicators to monitor the implementation of South Africa's bio-economy strategy	.

Output	Performance Indicator (s)	Original APP Annual Target	Amended target APP Target	Actual 2016/17 Performance	Comments/overall progress	Actions Taken
State of the STI reports	Number of state of STI Report	One state of STI Report finalized by 31 March 2017	Not amended	Achieved	The NSI performance analysis and the situational analysis reports were finalized	
NSI monitoring and evaluation (M&E) reports	Number of NSI M&E reports	2 NSI M&E reports finalized by 28 March 2017	1X NSI M&E Report finalized by 28 March 2017	Achieved	The 2016 STI Indicators report was finalized	
National STI information Portal	Successful implementation of national STI information portal	National STI information portal developed and launched by 30 November 2016	National STI information portal developed by 31 March 2017	Achieved	National STI information portal was developed	
STI data-sharing agreements between NACI and stakeholders	Number of Memoranda of Understanding (MoU) on sharing data and information reached between NACI and stakeholders (data)	Two MoU on sharing of data and information between NACI and stakeholders (data) by 31 March 2017	Not amended	Achieved	The annual target is two MoU to be signed and this has been achieved	

Output	Performance Indicator (s)	Original APP Annual Target	Amended target APP Target	Actual 2016/17 Performance	Comments/overall progress	Actions Taken
A high-level framework for an STI decadal plan	Ministerial approval secured for high-level framework for a new STI decadal plan	A high-level framework for an STI decadal plan submitted to the Minister of Science and Technology by 30 November 2016	Not amended	Not achieved	There were delays related to conceptual and methodological differences and supply chain management processes	Secured Director-General's approval and awaiting National Treasury's response
Analytical contribution in support of NSI governance, coordination and planning	Analytical contribution in support of NSI governance, coordination and planning completed	Analytical contribution in support of NSI governance, coordination and planning completed by 31 March 2017	-	Achieved	A draft report was completed.	

Output	Performance Indicator (s)	Original APP Annual Target	Amended target APP Target	Actual 2016/17 Performance	Comments/ overall progress	Actions Taken
Communication Plan	Communication Plan implemented	Communication Plan implemented by 31 March 2017		Achieved.	<p>1X Stakeholder engagement the 2016 South African STI Indicators report</p> <p>5X Collaboration and partnership meeting with STI stakeholders:</p> <p>(1) NSTF on 2 February 2017;</p> <p>(2) Center of Excellence in SciSTIP on 9 February 2017;</p> <p>(3) TIA on 16 February 2017;</p> <p>(4) TT100 on 17 February 2017;</p> <p>(5) Embassy of Switzerland on 17 February 2017.</p>	

Output	Performance Indicator (s)	Original APP Annual Target	Amended target APP Target	Actual 2016/17 Performance	Comments/overall progress	Actions Taken
Communication Plan	Communication Plan implemented	Communication Plan implemented by 31 March 2017		Achieved.	2X presentation to: (1) Minister of S&T on the NACI Annual Performance Plan on 27 February 2017; (2) Cluster on the STI indicators booklet on 1 March 2017.	
Internal corporate governance system approved and implemented	Approval of internal corporate governance system	Corporate governance system developed and approved by 30 November 2016	Not amended	Achieved		
Knowledge Management System	Knowledge management system developed and implemented	Knowledge management system developed and implemented by 30 November 2016	Draft framework for NACI Knowledge management system developed by 31 March 2017.	Draft Terms of Reference have been developed and sent to the DST Knowledge Management to assist NACI with sourcing technical advice for training and development of the strategy.	2X International participation on: (1) Innovation & Technology Absorption by South African Firms on 2 March 2017; (2) OECD CSTP& GSF meeting on 20 – 24 March 2017.	The Secretariat engaged DST Knowledge Management Unit, which advised to source training and the development of the strategy.

6. EVENTS AND STAKEHOLDER ENGAGEMENTS

6.1 Roundtable Discussion on the Performance Analysis of the NSI

The 2016 November NSI stakeholder engagement or roundtable discussion should be seen as a useful first step forward in terms of building policy in a more inclusive way, ensuring stakeholders' commitment and endorsement of key directions for the forthcoming new White Paper. It also served to bridge a gap between the performance analysis and development of the new White Paper. The NSI actors called for deeper engagement with the notions and relationships between innovation, inclusivity, sustainability and development in the context of South Africa. They also took a forward-looking approach and identified key issues for consideration in drafting the new White Paper.

First, the NSI needs to be retained as a guiding framework for the new White Paper. However, it may require complementary solutions to address deficiencies

in dealing with issues like inclusion and sustainability, because it does not incorporate the need for changing socio-technical systems (energy, mobility, healthcare, water, food and so forth) and does not provide a methodology for doing this. The original motivation, and the inspirational White Paper conception of the NSI still struck a chord of relevance among NSI actors. The NDP's inclusion and articulation of future expectations and the role of NSI represent a critical step in achieving horizontal coordination, and laying the foundation for the new White Paper. The NDP called for the expansion of the well-coordinated, coherent and effective NSI that is aligned to national strategies.

Second, coordination-focus (vertical and horizontal) should be more than setting an apex structure. There is no scientific basis for concluding that a high-level formal coordination mechanism will improve things and the NSI will be able to address some of its failures (and new challenges). This does not, however,

imply that having such formal structure is not important. On the contrary, it was suggested that formal apex mechanism needs to be complemented by other forms of coordination or platforms or networks of coordination-including the strengthening of system's soft coordination mechanism, by bringing together stakeholders on a regular basis for informal discussions; through ad hoc coordination, as required, and should be problem driven, have a time horizon, so be done within a specific mandate. This needs-driven coordination should then also to look at policy mixes, such as how a wide range of policies encourage or block solutions for the issues at stake. NSI actors emphasised that a coordinated system should (a) foster a holistic perspective on innovation processes; (b) lead to development and alignment of policies for systemic action and system change; (c) promote involvement of a broader range of stakeholders and perspectives in the formulation of policy and finally, encourage the use of experimental policies to support agile policy development and learning.

Third, inclusion, stakeholders' engagement, public participation and non-traditional R&D actors (such as civil society

or those mainly affected by STI policy actions) tended to be excluded. As presently constituted, civil society and the informal sector are rarely involved as actors in innovation system planning, tending to be placed in the role of beneficiaries. As a consequence, there could have been opportunities may have been missed, for instance in respect of informal economy innovations. The NSI has many stakeholders, but they need to share the same vision. Engagement between stakeholders will be a key success factor. Fourth, a non-linear view of innovation, which should be seen as an ecosystem. Fifth, STI human resources/human capital development and capacity building. Sixth, prioritisation-embedding foresight exercise in decision-making processes and building necessary institutional capacity.

Seventh, opportunities to be seized with regard to broader trends (digitisation, sustainability). Eighth, better data and monitoring, evaluation and learning.

6.2 Roundtable Discussion on the draft Innovation Scorecard Framework



Figure 6: Roundtable discussion on the South African Innovation Scorecard Framework

On 21 October 2016, a roundtable discussion on the draft Innovation Scorecard Framework occurred. The inputs from the consultation were used to refine the draft framework and its piloting.

Further details of local and international participation in events for the year under review are listed in Table 2 and 3 on the next page:

Table 2: NACI's participation in local events and strategic engagements

Event	Location	Attendee	Date
NACI-DST Business Symposium on STI Investment	The Innovation Hub Conference Venue, PRETORIA	NACI Stakeholders	2 June 22016
Presentation to the MUT Council on the "Importance of Research and Innovation and benefits to the University	Durban	Acting CEO	28 September 2016
Invitation to the Human Resource Development Provincial Coordination Forum Meeting	Cape Town	Mr Petrus Letaba	20 October 2016
Minister's meeting with Chairpersons and Chief Executive Officers (CEOs) of Public Entities	CSIR	Acting CEO	21 October 2016
Framework for the development of an Innovation Score-card	The Innovation Hub	NACI Stakeholders	21 October 2016
NACI Workshop on the performance of the National System of Innovation (NSI)	Sheraton Hotel	NACI Stakeholders	4 November 2016
Stakeholder Consultation on NSTIIP	DST	NACI Stakeholders	28 March 2017



Figure 7: NACI's participation in local events and strategic engagements

Table 3: NACI's participation in international events

Event	Location	Attendee	Date
OECD CSTP	Paris	Acting CEO	14 – 15 March 2016
Organization of Economic Cooperation and Development (OECD)'s Working Party of National Experts on Science, Technology and Innovation Indicators (NESTII)	Paris	Mr Petrus Letaba	16 – 18 March 2016
SADC-Science, Technology and Innovation Policy and Indicators Meeting	Botswana	Mr Petrus Letaba	31 March – 1 April 2016
2nd Global Forum on National Advisory Councils	Republic of Korea	Acting CEO	1 – 2 September 2016
BRICS Economic Forum	India	Acting CEO	13 – 14 October 2016
OECD CSTP	Paris	Acting CEO	24 – 27 October 2016
Malaysia Joint Committee of South Africa and Malaysia STI Collaboration	Malaysia	Mr Petrus Letaba	14 – 16 November 2016
OECD GSF Expert Group Meeting	Paris	Mr Petrus Letaba	13 December 2016
OECD GSF	Paris	Acting CEO	20 – 24 March 2017



PART C: GOVERNANCE INFORMATION

7. GOVERNANCE REPORT

The Science and Technology Laws Amendment Act (Act No. 16 of 2011) provides that the NACI Council must meet at least once per quarter to ensure proper oversight over the Council advisory work programme. In addition, the Guidelines to NACI and its Operations require that the NACI Executive Committee meet as often as is necessary to direct the work programme of the Council in to dealing with urgent matters.

7.1 Meetings

NACI Council Meetings 2016/17

Table 4: Council Meeting Attendance 2016/17

Council Member	Meetings Attended				
Date of Meeting	24/02/16	24/06/16	17/08/16	23/11/16	22/02/17
Prof. C. de la Rey (Chairperson)	x	√	√	√	√
Dr M. Cele (Acting CEO)	√	√	√	√	√
Ms C. Buseti	x	√	√	√	√
Prof. R. Diab	√	x	√	√	√
Prof. A. Eberhard	x	x	resigned		
Prof. G. Gray	√	√	√	x	√
Dr A. Jammie	√	x	√	x	√
Dr S. Moephuli	√	√	√	x	
Mr M. Mkhwanazi				x	x
Ms Z. Monnakgotla	√	√	x	√	√
Mr D. Naidoo	√	√	√	√	x
Mr K. Nassiep	√	√	√	√	√
Mr A. Ngcaba	x	x	x	x	x
Ms N. Nyembezi-Heita	√	resigned			
Mr S. O'Carroll				√	√
Dr M. Qhobela	√	√	√		√
Dr S. Sibisi	x	x	resigned		
Prof. C. Soudien	x	√	√	√	x
Mr P. Steenkamp		√	√	√	√
Mr G. Strachan	√	x	x	x	x
Prof. J. Thomson	√	x	√	√	√
Ms L. Zondo	√	x	x	resigned	

Table 5: EXCO Meeting Attendance 2016/17

EXCO Member	Meetings Attended					
Date of Meeting	03/02/16	05/04/16	15/06/16	10/08/16	14/11/16	01/02/17
Prof. C. de la Rey	√	√	√	√	√	√
Dr M. Cele	√	√	√	√	√	√
Mr D. Naidoo	x	√	√	√	√	√
Mr G. Strachan	√	x	√	x	x	x
Prof. J. Thomson	√	√	x	√	x	x

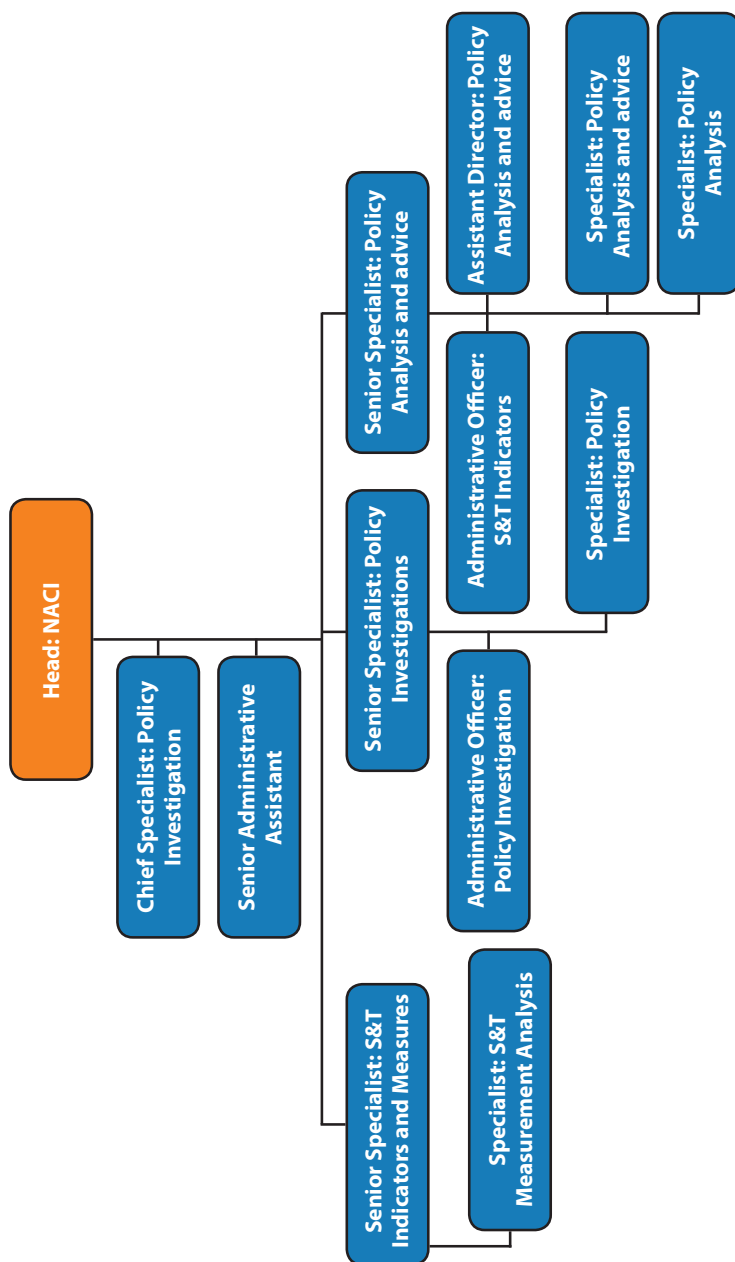


PART D: HUMAN RESOURCE MANAGEMENT

8. HUMAN RESOURCES

To implement its advisory work programme, the NACI Council is supported by the NACI Secretariat. The Secretariat is composed of a small team of 13 people including the Acting CEO, as indicated in the human resources organogram below. During the period under review, a Skills Audit process has been initiated within the Secretariat with the hope that an expanded and well-trained staff complement will result in improved capacity to execute projects in a broader range of innovation areas, further necessitated by the need to respond quickly to topical issues in the NSI.





The Operational Structure of the NACI Secretariat



PART E: FINANCIAL INFORMATION

9. FINANCIAL RESOURCES

The NACI allocated budget for 2016/17 was R18, 8 million, including compensation of employees. The expenditure on goods and services from the annual budget was R8,2 million of which NACI expended R5,7 million resulting in an under-expenditure of R2,4 million. Accumulated savings in respect of goods and services occurred as a result of the development of national STI data and information portal internally.

Table 6: NACI BUDGET 2016/17

Description	Expenses	Allocated Budget	Available funds
	(R'000)	(R'000)	(R'000)
Compensation of employees	8 451	10 515	2 064
Goods and Services	5 762	8 255	2 490
Payment of Financial Assets	4	4	-
Household(Leave gratuity)	32		
Total	14 249	18 803	4 554

10. ABBREVIATIONS

ASSAF	Academy of Science of South Africa
BRICS	Brazil,Russia,India,China,South Africa
CSIR	Council for Scientific and Industrial Research
CNID	Council of Innovation for the Development of Chile
DST	Department of Science and Technology
GDP	Gross Domestic Product
GERD	Gross expenditure on R&D
ICT	Information and Communication Technology
KISTEP	Korea Institution of Science and Technology Evaluation, Planning
NACI	National Advisory Council on Innovation
NEPAD	New Partnership for Africa`s Development
NSTIIP	National Science, Technology and Innovation Information Portal
NIPMO	National Intellectual Property Management Office
NSI	National Science Innovation
NRF	National Research Function
NRDS	National Research and Development Agency
SACNASP	South African Council for Natural Scientific Professions
SADC	South African Development Community
SANSA	South African National Space Agency
SARChI	South African Research Chairs Initiative
SMMEs	Small,medium and micro enterprises
SET	Science, Engineering and Technology
STI	Science, Technology and Innovation
STIC	Science, Technology and Innovation Council
PACST	Presidential Advisory Council on Science and Technology
OECD	Organisation for Economic Cooperation and Development
R&D	Research and Development
R&T	Research and Technology
TIA	Technology Innovation Agency
VC	Venture Capital

[illegible]

NOTES

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