NATIONAL ADVISORY COUNCIL
ON INNOVATION

Annual Report
2014/15

INNOVATION FOR A BETTER FUTURE

science
& technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

NACi
NATIONAL ADVISORY COUNCIL ON INNOVATION

Innovation for a better future

NACI ANNUAL REPORT 2014/15

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Part A: General Information

1. MESSAGE FROM THE MINISTER OF SCIENCE AND TECHNOLOGY

Through the National Development Plan (NDP) and 9-point plan, Government continues to highlight the vital role of Science Technology and Innovation in igniting economic growth and creating jobs in line with government's mandate.

The range and diversity of such innovation provides the context for our best natural and social scientists, economists, business leaders and knowledge leader to provide advice to policy makers to select the best of these innovations. The selection covers the range of innovation possibilities across Government sectors from water supply to the most beneficial use of our mineral wealth; and from the most sustainable energy mix to food security etc. The considered advice provided by NACI mustassist in informing policy decisions that will have central significance in addressing the challenges of poverty, inequality and unemployment and thus to the economic and social advancement of the nation.

During the inauguration of the new Council in September 2014, I highlighted three priorities for NACI.

First, NACI is to undertake a review of the 1996 White Paper on Science and Technology, in order to inform preparations for the development of a new White Paper on STI. NACI has embarked on this work with vigour and I look forward to the outcome of this audit.

Second, NACI was tasked with preparing for the development of a decadal plan on STI. This decadal plan will guide the trajectory of our National Systern of Innovation, and will be reviewed in midterm to ensure that promising research and innovation opportunities continue to be uncovered during the period of the Decadal Plan.

Third, NACI is tasked with the development of the innovation portal framework to serve as a central repository for improved accumulation, analysis and utilisation of the plethora of information on science, technology and innovation that is currently produced and hosted by different publicly funded agencies.

These important tasks are considered to be within the capacity of NACI, in part because of the fine work done by the outgoing Council. I would like to thank the outgoing Council, chaired by Dr Steve Lennon, whose term ended in the first quarter of the 2014/15 financial year. Through their efforts and leadership, NACI has grown significantly, and developed sound advice either at the request of the government or on its own initiative.

I have full confidence that the diverse experience and expertise of the current Council will enable NACI to continue building on its success, and to embrace the challenging mandate that has been given to the Council.

GNM Pandor, MP
Minister of Science and Technology
Date: 16/07/2015

2. CHAIRPERSON'S OVERVIEW, PROF. CHERYL DE LA REY

During the second half of 2014, the Minister of Science and Technology, Honourable Ms Naledi Pandor appointed a new chairperson and members of NACI. To have the opportunity to advise the Minister of Science and Technology, the Honourable Naledi Pandor and through the Minister, the Ministers' Committee and Cabinet is an immense honour. At our very first meeting with the Minister in September 2014, the significance of our responsibilities was clearly articulated and as a newly appointed Council, we began our work with enthusiasm and a strong sense of purpose. Our overarching goal is to provide useful advice to accelerate the contribution of science, technology and innovation to the realization of the national goals as expressed in the National Development Plan.

During the inauguration of the Council in August 2014 the Minister identified a number of priority areas where advice is needed. A Review of the White Paper on Science and Technology as well as a new decadal plan, are among the projects to be undertaken as agreed with the Minister. This exciting and ambitious new work plan necessitated some reprioritization of projects for the 2014/15 year. Furthermore, the Council decided to diversify its mode of operation to enhance the responsiveness and relevance of its advice.

A rapid advice system is part of the new programme of work that the Council initiated to be implemented from the 2015/16 financial year. This system will allow NACI to use available expertise and meta-analyses of existing knowledge to identify solutions for the immediate challenges identified within the national system of innovation. Of course, for wide-ranging objectives and where knowledge on an issue or topic is scant, then NACI will undertake or commission research. A notable development in this regard in 2014 was the Memorandum of Understanding signed with the Academy of Science of South Africa (ASSAf).

Several other notable achievements for the 2014/15 reporting year are covered in this Annual Report. Since our appointment to the Council took effect during the 2014/15 financial year, many of the achievements are due to the leadership and efforts of the previous Chairperson and Council. On behalf of the current Council, I wish to express our appreciation to the outgoing Chairperson, Dr Steve Lennon and all the members who served with him. The NACI Secretariat played a key role in ensuring a smooth transition and we are most grateful for their hard work and dedication.

As a new Council, we are fortunate to have a strong foundation to support our current and future work plans. We look forward to a busy and productive 2015/16 period.

Professor Cheryl de la Rey

3. OPERATIONAL CONTEXT

3.1 International Lessons on Science, Technology and Innovation Advice

The National Advisory Council on Innovation (NACI) recently invited Prof. Howard Alper, Chairperson of Canada's Science, Technology and Innovation Council (STIC), to deliver a lecture titled, "Shaping the Future of a Nation through Science, Technology and Innovation-Policy Advice and Benchmarking". The lecture highlighted the importance of the formal and informal linkages of the STI advisory body with external knowledge sources. STIC established these external knowledge linkages through the diverse representative of members from every region of Canada to bring perspective from the key parts of the national science and innovation system: academia, business and government. In addition, the Council members of STIC consult the external experts to enhance their understanding of specific advice requests. This arrangement is similar to that of the NACI which, according to Section 6(2) of the NACI Act (Act No. 55 of 1997), is supposed to be representative of all the sectors and be constituted in a manner that ensures widespread expertise and experience regarding:

- National and provincial interests;
- Scientific and technological disciplines;
- Innovation;
- The needs and opportunities in different socioeconomic fields; and
- Research and development in all sectors.

Whereas the NACI and the STIC share similar characteristics on most operational and structural issues, the most distinct difference is how the STIC is integrated into the government of Canada's policymaking and evaluation processes. Its advice result mainly fro the requests by any Minister, including the Prime Minister, through a formal letter from the Minister of Industry. This is not yet fully functional for NACI although there is a satisfactory progress in positioning the organisation as the premiere advisory body on science, technology and innovation in South Africa. The STIC's integration into government's policymaking processes is achieved through the participation of government deputy ministers in its processes. This provides the Council with the internal government perspective as well as access to internal networks within government.

The discussion on the composition and external networks of NACI and STIC relates well to the international debate on whether there should be *policy for science* or *science for policy*.

The first position is based on policymaking for science in the context of the STI advice. It refers to advice on policies that guide the development of science and related activities. *Science for policy* refers to the provision of scientific evidence for policymaking. NACI aligns itself to both ideological positions. The requirement for evidence-based policy is fulfilled by appointing experts (including scientists) to give input in the policy advice process. The collaboration agreement signed between NACI and the Academy of Science of South Africa (ASSAf) also enables NACI to access the valuable inputs from the scientific community. On the other hand, as required by NACI Act, the Council advises on issues regarding the funding of science, technology and innovation system, among others, in line with the *policy for science* ideology.

3.2 The Innovation Landscape in South Africa

3.2.1 Introduction

The advisory programme of NACI is based on NACI Act (Act No. 55 of 1997); the priorities of the Science and Technology Minister; the needs of the country as outlined in the National Development Plan (NDP) and other government policy documents; and in response to some key issues within the South African innovation landscape. As stated by the Ministerial Review Committee report, the system of innovation in South Africa was conceptualised in the 1996 White Paper on Science and Technology, as a dynamic evolving system aimed at transforming all the sectors of the economy (business, science councils, higher education, etc). As a result, there is a need to monitor, evaluate and assess the progress of the NSI.

NACI compiles annually the South African Science, Technology and Innovation Indicators booklet that is intended to assess the state of innovation in South Africa. During the 2014/15 financial year, the 2013 booklet was launched at the "NACI Indicators and Infrastructure for the NSI Workshop" as a platform to discuss the state of innovation in South Africa. The 2014 booklet was completed in the 2014/15 financial year and was set to be launched in the first quarter of 2015/16 financial year. This analysis of the state of innovation in South Africa is based on the 2014 South African Science, Technology and Innovation Indicators booklet and other relevant information.

3.2.2 Performance of the South African Science System

In the 2013/14 financial year, NACI showed how a small science system in South Africa is punching above its weight if measured on the number of high impact publications produced in proportion to the researchers and the research and development (R&D) expenditure. The 2014 South African Science, Technology and Innovation Indicators booklet further showed the Humanities research field followed by Natural Sciences as well as the Medical and Health Sciences as being the most efficient in terms of scientific publications per R&D expenditure. As a result of the high efficiency for the Humanities research field by the South African researchers during the period 2009 to 2013 its percentage world share was the highest (1.37%) followed by the Social Sciences (1.14%), Agricultural Sciences (0.99%) and Natural Sciences (0.72%). Similarly, in terms of global citations, the Humanities research field was leading in South Africa during the same period (1.05), followed by Medical and Health Sciences (1.00); Agricultural Sciences (0.99); and Natural Sciences (0.98).

The global benchmarking on South Africa's research fields reveals the relatively high global competitive advantage in Humanities and Social Sciences. More intervention is needed for Engineering and Technology scientific areas in order to stimulate technological innovation and technical progress. South Africa is strengthening its research collaborations with countries such as the United States of America and England, which is an opportunity to increase the country's research capability in the areas that lack global competitiveness. Although R&D collaboration with BRICS and African countries is still relatively small, these collaborations are steadily improving.

3.2.3 Human Capital Development for Science, Technology and Innovation

The NDP places a strong emphasis on skills in science, technology, engineering and mathematics as the core foundation to eradicate poverty and reduce inequality. The performance of learners at Grade 12 level in mathematics and science subjects is a vital indicator on the health of a pipeline for the supply of future skills for research, engineering, technology and innovation. Unfortunately, the 2014 South African Science, Technology and Innovation Indicators booklet showed a highly constrained STI human capital pipeline as only 7.6% of the learners who passed Grade 12 in 2014 were able to obtain 60% for mathematics. For physical science, only 5.5% of the learners who passed matric in 2014 obtained a 60% pass mark. The quality of passes in mathematics and physical science in Grade 12 impacts directly on the size and composition of science,

engineering and technology (SET) enrolment at undergraduate level. For example, of the learners who passed Grade 12 mathematics with a 60% pass rate, only 43.6% were females. Similarly, the proportion of female SET enrolment at public higher education institutions in 2013 was 45.5%.

Between 2004 and 2013, doctoral SET graduations increased at the rate of 9.3% per annual, which is very high if compared to that of total doctoral graduates (7.5%). The large pool of doctoral graduates makes it necessary to create the opportunities for the development of young researchers through opportunities such as mobility grants. The Department of Higher Education and Training's the New Generation of the Academics Program (nGAP) is a perfect example of typical government interventions that can accelerate absorption of SET higher end skills in order to increase South Africa's research and innovation capacity.

3.2.4 Technical Progress and Improvement

The country's technological progress and improvement are hampered by a decline in business investment in research and development. This decline is in line with the total fixed-capital formation by the private sector as a result of low business confidence. The rise in the proportion of R&D investment by the higher education sector and a decline by the private sector resulted in an increase of basic research being conducted (25.3% in 2012/13) and the reduction of focus on experimental development (28.4% in 2012/13 from 46.5% in 2008/9) as illustrated in Figure 1.

The decline in the proportion of research directed towards experimental development has a negative impact on the country's ability to invent new products and processes, as shown by the decline in the number of South African patent family applications from 144 in 2008 to only 45 in 2012.

Figure 1: Proportion of general expenditure on research and development by the type of research.
Source: DST "National Survey of Research and Experimental Development"

3.2.5 Innovation for Economic Development and Social Upliftment

NACI's vision is based on the national system of innovation that is well co-ordinated and in which science, technology and innovation are recognised as primary drivers of economic and social development, which enables South Africa to participate in the global knowledge economy. The economic development and social upliftment, as the high-level impacts of the NSI as envisioned by the National Research and Development Strategy, are reported by the 2014 South African Science, Technology and Innovation Indicators booklet on the sections of wealth creation and quality of life respectively. Wealth creation is measured by two set of indicators, namely: gross domestic product (GDP) performance and employment statistics.

Although the NDP targets the GDP growth of 5.4% per annum in order to reduce the high unemployment rate of over 25% to 6% by 2030, the GDP growth rate has slowed down drastically over the past three years (2.2%, 2.2% and 1.5% in 2012, 2013 and 2014 respectively). An analysis of value-added proportion by sector (Figure 2) shows a constant decline in the contribution of the manufacturing sector to the GDP. This sector is important, as a significant portion of South African merchandise exports is derived from manufactured products (45.9% in 2013). Innovation can significantly revitalise the manufacturing industry as advocated by a recent Industrial Policy Action Plan.

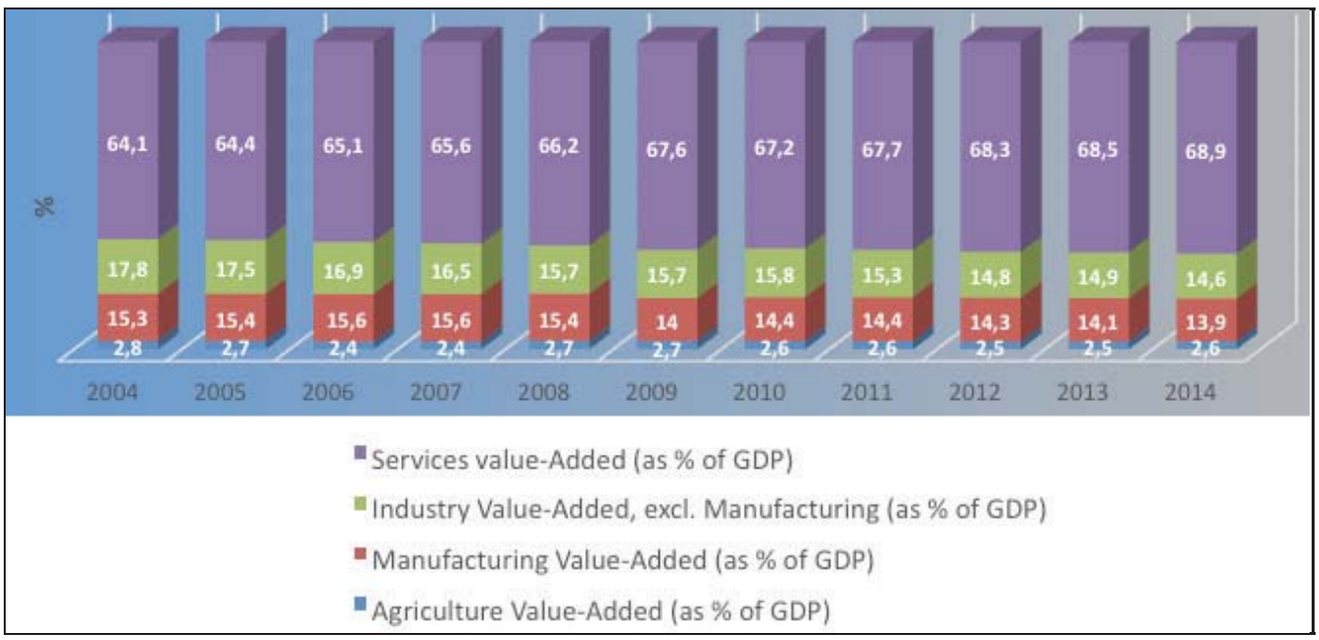


Figure 2: Value-added distribution by sector

As mentioned in the 2014 South African Science, Technology and Innovation Indicators booklet, a successful NSI needs to be responsive to issues that affect the quality of life of all citizens. Although there is a continued improvement in the literacy rate in various categories (adults in general, youth, males and females), there are key issues that need to be addressed such as the high HIV/ AIDS prevalence rates for the adult population (aged 15 to 49 years), which was 16.8% in 2014 and 16.7% in 2013. In terms of the youth aged 15 to 24 years, the HIV prevalence rate is encouragingly declining to 8.7% in 2014. The high unemployment rate (25.1% in 2014) and inequality are issues that need to be addressed through the implementation of the NDP.

NACI has concluded the study on the indigenous knowledge systems (IKS) during the 2014-15 financial year. This study proposed interventions to maximise the impact of IKS flagship projects on the targets of the NDP. The IKS is significant in promoting an inclusive national system of innovation.

3.2.6 Conclusion

A conclusion can be drawn that the NSI has performed very well over the past years, guided by policy instruments such as the 1996 White Paper on Science and Technology, the National Research and Development Strategy, the Ten-Year Innovation Plan and the National Development Plan. The main challenge is that of an integrated innovation system inclusive of the private sector and civil organisations. The integrated system will help to upscale innovations from the higher education research and technology demonstrators developed by the science councils. The review of the 1996 White Paper on Science and Technology and a planned new Decadal Plan on Science, Technology and Innovation are likely to address fragmentation in order to position innovation as a driving force for economic development and social upliftment in South Africa.

4. CORPORATE OVERVIEW

4.1 NACI Mandate:

NACI is a statutory advisory body established through the National Advisory Council on Innovation Act (Act No. 55 of 1997) ("the Act"). NACI was established to advise the Minister for Science and Technology and through the Minister, the Minister's Committee and Cabinet on the role and contribution of science, technology and innovation in promoting and achieving national objectives. In terms of Section 4(1) of the Act, NACI has a broad mandate on all aspects of the national system of innovation (NSI). As spelled out in the Act, the NACI's advisory services are directed at:

- Co-ordination and stimulation of the national system of innovation;
- Promotion of co-operation within the national system of innovation;
- Development and maintenance of human resources for innovation through selective support for innovation, training, research and development in the higher education sector, science councils, science and technology institutions and private institutions;
- Strategies for the promotion of technological innovation, development, acquisition, transfer and implementation in all sectors;
- International liaison and co-operation in the fields of science, technology and innovation;
- Co-ordination of science and technology policies and strategies with policies and strategies in other environments;
- Structuring, governance and co-ordination of the science and technology system;
- Identification of research and development priorities in consultation with provincial departments and interested parties, and their incorporation into the process of government funding for research and development;
- Funding of the science and technology system in respect of its contribution to innovation, etc.

4.2 Vision:

NACI envisions a well co-ordinated national system of innovation in which science, technology and innovation are recognised as primary drivers of economic and social development, which enables South Africa to participate in the global knowledge economy.

4.3 Mission Statement:

To achieve this vision, NACI's mission is to serve as the premier advisory body to the Minister of Science and Technology and Cabinet on all innovation policy matters, in particular:

- The contribution of innovation to economic competitiveness;
- The contribution of innovation to economic development and social upliftment; and
- The co-ordination and coherence in the national system of innovation, thereby facilitating the achievement of national objectives.

The NACI's mission finds expression in the motto:
"Innovation for a better future"

4.4 Values:

NACI's advisory function is driven by a core set of values, which are:

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

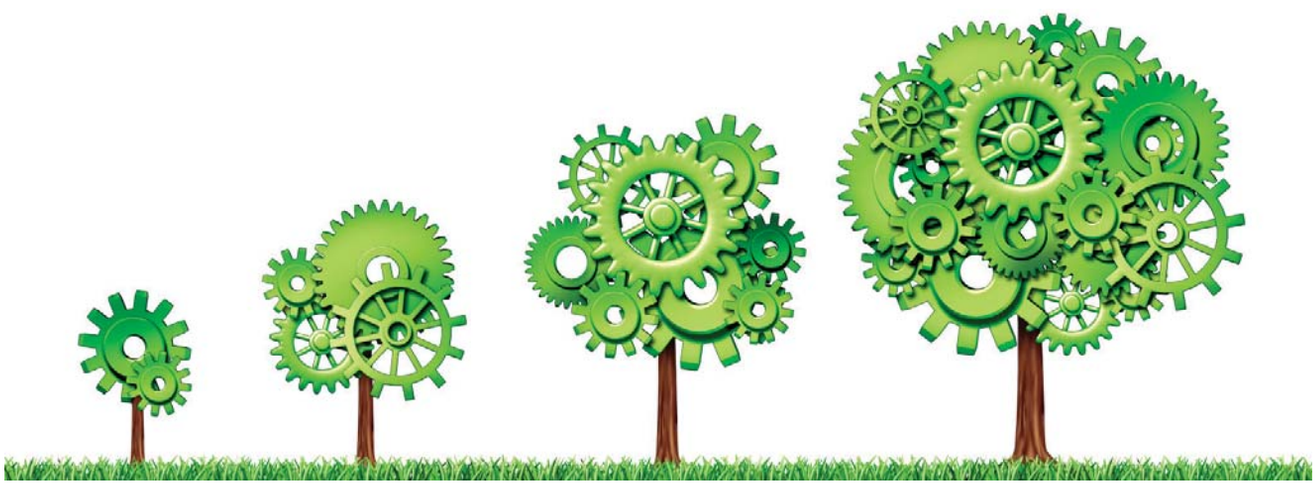
4.5 Corporate Objectives:

The NACI corporate objectives for the 2014/15 financial year are:

- To engage with the Minister to identify key issues to be addressed during the financial year;
- To initiate the processes for the review of the 1996 White Paper on Science and Technology;
- To initiate processes for a framework that will guide the development of the Decadal Plan on science, technology and innovation; and
- To pursue the establishment of a central database for innovation information through a national repository (a data portal) for all data, information and analytical reports on relevant topics and initiatives.

4.6 NACI Advisory Structure:

The advisory structure of NACI depicted in Figure 3 is guided by the NACI Act (Act No. 55 of 1997). The head of the Secretariat is the Chief Executive Officer (CEO), who is also a member of the NACI Executive Committee and the Council. In addition to the CEO, the Executive Committee consists of the Chairperson of the Council, two members designated by the Council and an official from the Department of Trade and Industry. The 16 to 20 members of the NACI Council include the members of NACI Executive Committee and the members appointed in their personal capacity based on their distinguished knowledge on matters concerning the function of the national system of innovation. The NACI Council's advice regarding the innovation policy, are primarily directed to the Minister of Science and Technology from where the advice can also be directed to the Minister's clusters/committees and Cabinet.



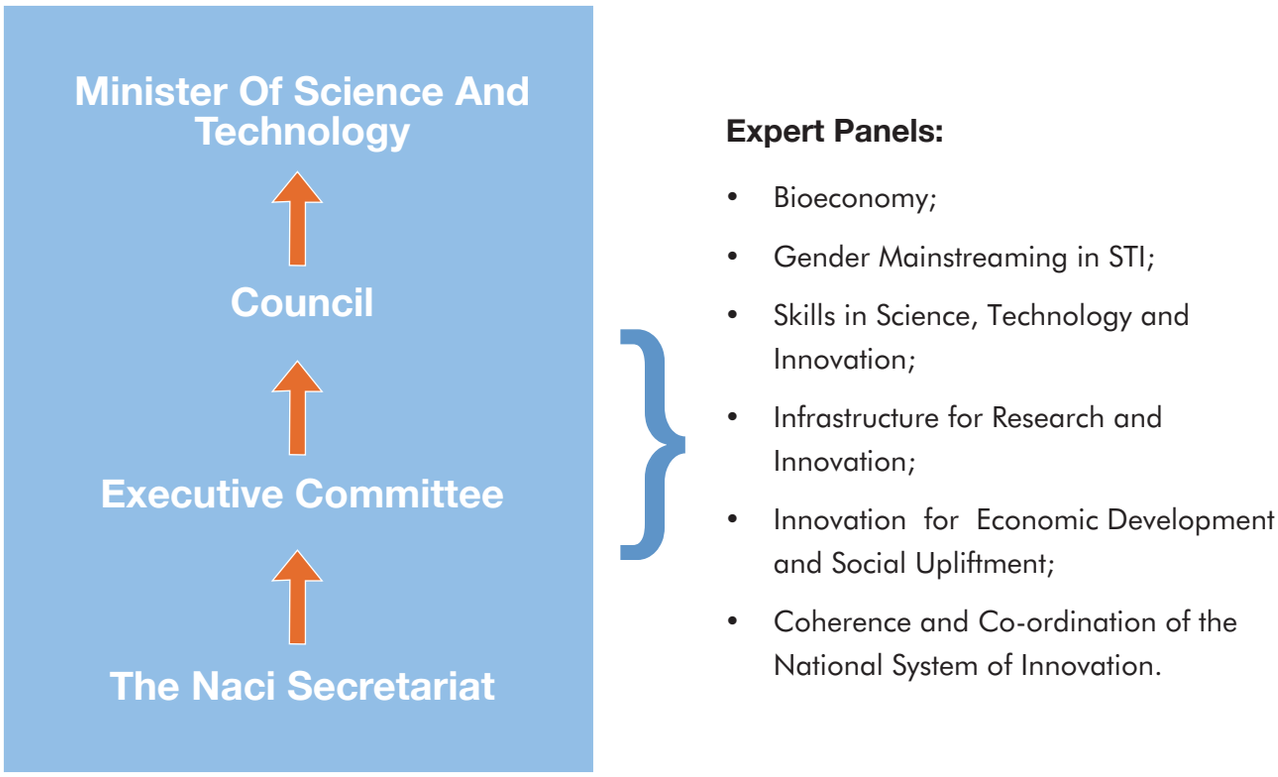


Figure 3: National Advisory Council on Innovation advisory structure.

4.7 Expert Panels:

The expert panels enable the Council to draw on additional expertise from the pool of experts within the national system of innovation. Section 8(4)(a) of the NACI Act (Act No. 55 of 1997) makes provision for the appointment of these experts and under Section 8(4)(b), the chairperson of an expert panel is designated by the Council from among its members. The experts are selected from academia, science councils, government, civil organisations and the industry. They are appointed in their individual capacity for a short-term, project-linked period.

5. COMPOSITION OF NACI

The fourth NACI Council was inaugurated by the Minister of Science and Technology on 30 September 2014. The members are high-profile individuals drawn mainly from the private sector, heads of science councils and the higher education sector. The Department of Trade and Industry official appointed by the Minister is Mr Garth Strachan: Deputy Director-General of the Industrial Development Policy.

NACI COUNCIL MEMBERS (2014-2018)

Prof. Cheryl de la Rey (Chairperson)

Dr Azar Jammine

Dr Albert van Jaarsveld

Mr Sim Tshabalala

Ms Zanele Monnakgotla

Mr Andile Ngcaba

Prof. Roseanne Diab

Dr Sibusiso Sibisi

Adv. Louisa Zondo Sibisi

Mr Dhesigan Naidoo

Ms Nonkululeko Heita-Nyembezi

Ms Claire Busetti

Mr Kevin Nassiep

Prof. Glenda Gray

Prof. Jennifer Thomson

Prof. Olive Shisana

Mr Garth Strachan

Prof. Anton Eberhard

Dr Shadrack Moephuli

Part B: Performance Information

1. NACI'S ACTIVITIES, PERFORMANCE AND OUTPUTS

The programme of work for NACI is based on projects that address the systemic issues within the national system of innovation. These activities are guided by Section 4(1) of the NACI Act (Act No. 55 of 1997) and they include issues such as advice on co-ordination and stimulation of the NSI; monitoring and evaluation for the NSI; mathematics, science and engineering skills; bioeconomy policies and strategies; innovation for economic development and social upliftment; and gender mainstreaming in science, technology and innovation (STI).

A new Council was inaugurated during the 2014/15 financial year and as a result, there was a review of the NACI's advisory programme. The review resulted with the termination of a project on the STI infrastructure on the grounds that the subject matter fell within the jurisdiction of another organisation. The Council further suspended and deferred the project on the structure, governance and co-ordination of the national system of innovation, with a view of re-initiating the work as part of the activities of the review of the White Paper on Science and Technology planned for the 2015-16 financial year. The following sections report on how NACI performed on its planned advisory programme for 2014/15.

2. MONITORING, COHERENCE AND CO-ORDINATION OF THE NSI

This strategic priority encompasses the policy focus areas of Monitoring, Evaluation and Indicators and the Structuring, Governance and Co-ordination of the national system of innovation.

2.1 Policy Thrust 1: Monitoring, Evaluation and Indicators

The purpose of the monitoring, evaluation and indicators focus area is to provide critical insights into the status of the NSI as well as its progress on coherence and co-ordination efforts as well as progress towards achieving national development goals. In addition, the organisation is mandated by the NACI Act (Act No. 55 of 1997) to advise on the establishment and maintenance of information systems to support the monitoring and evaluation of the overall management and functioning of the NSI. During the year under review, the following projects were undertaken:

1. ***The South African Science, Technology and Innovation Indicators Booklet, 2014.*** This booklet is an annual publication of the NACI aimed at providing critical South African science, technology and innovation indicators that are useful for the assessment of the status and performance of the national system of innovation. In developing this publication, NACI draws from a wide range of extensive data from both local and international data sources; providing indicators over a 10-year period in order to allow for proper trend analysis. Among others, indicators contained in this booklet have been used as a basis to support evidence-based ministerial advice on specific issues and requests. In future, NACI plans to explore the need for an integrated approach to such measurement through the development of an innovation index.
2. ***South African National Innovation Information Portal Framework***. The purpose of this project is to develop a framework for a national innovation information portal to serve as a platform for storage and dissemination of innovation information. The proposed portal is intended to be a single point of access for all stakeholders to draw from and to deposit information on measures and analyses of all aspects of the NSI. Such a portal would provide up to date, accurate, credible and accessible information on the state of the NSI in South Africa. As part of this project, engagements were conducted with identified relevant stakeholders and data owners to explore the feasibility of the portal. The inputs from these engagements were used in the report as a basis to develop recommendations on the need, vision and feasibility case for developing such a portal for ongoing assessment of the NSI.

2.2 Policy Thrust 2: Structuring, Governance and Co-ordination of the NSI

Development of a Foresight Framework for Science, Technology and Innovation. Foresight studies provide medium to long-term likely future science, technology and innovation developments for planning and policy formulation, which could contribute to social and economic benefits. Due to the importance of such studies, the Minister of Science and Technology requested NACI to compile a Foresight Framework for STI policy. The objective of the framework was two-fold: to provide direction for policy and to inform the Minister on the role of foresight exercises in the STI domain. The framework was informed by a wide spectrum of literature. Findings touch on the NACI's internal structures for priority setting and foresighting, principles underpinning the NACI's future role, relevant parts of the previous foresight study with the new focus areas of the National Development Plan, coverage of medium to long-term foresights and short-term sectoral foresight projects. For future foresights to be useful, the framework proposes key recommendations on various aspects. The NACI Council has decided to use outcomes of this framework as an input to a Decadal Plan.

3. PROMOTION OF MATHEMATICS, SCIENCE AND TECHNOLOGY IN THE EDUCATION AND TRAINING VALUE-CHAIN WITH A VIEW TO SUPPORTING THE NSI

3.1 Policy Thrust 3: Strengthening Skills for Mathematics, Science and Technology

In this policy thrust, the NACI initiated an investigation into ***"Skills Sustainability and Government Planning of Flagship Projects".*** The central focus of this research is to investigate, using case studies, the extent of which an improved skills eco-system was designed and envisaged during the construction and development phases of key flagship projects, and the extent to which the skills eco-systems were sustained thereafter. In the South African context, government flagship projects can be viewed as the triggers which lead to the formation of particular skills eco-systems – formed to support the education and training requirements of large-scale state-led initiatives. Key flagship projects that NACI is focusing on include: the Gautrain, Medupi Power Station, a wind farm in the Eastern Cape and a water-improvement project in the Free State. The investigation, which is ongoing, will assist policymakers to examine the emergence of skills-ecosystems and the extent to which these are likely to be sustained, in particular along the Technical, Vocational and Education and Training (TVET) value-chain.

4. BIO-ECONOMY POLICIES AND STRATEGIES

The South African government has adopted the National Development Plan as a long-term vision for economic development. Among the strategic aims of the NDP is a transition to a low-carbon economy. The Department of Science and Technology launched the South African Bioeconomy Strategy in January 2014. The industrial and environmental sectors of the strategy aim to create "bio-based" commercial and industrial goods. The transition from a fossil-based to a bio-based economy would contribute towards solving some of the major global challenges such as reducing the country's carbon footprint. During the 2014/15 financial year, the NACI initiated and concluded a study called ***"Biomass Sustainability for Future Energy and Biorefineries in South Africa"***. The purpose of the study was to review the state of the South African renewable energy sector with special emphasis on the contribution of biomass. In addition, on the bioeconomy policies and strategies priority area, the NACI initiated a project on ***"Bioeconomy Metrics and Survey".***

4.1 Policy Thrust 4: Competitive Niches for New Innovations in the Bioeconomy Sector

The Biomass sustainability for future energy and bio-refineries in South Africa study is aimed to address several aspects of sustainability associated with biomass utilisation for energy (fuels, electricity) in comparison to other applications. While focusing mostly on aspects of biomass availability, recognising that the supply of biomass is a critical component to sustainable biomass utilisation, and the use of biomass for energy purposes, the work also recognised the unique multiplicity of possible applications of biomass. Both plant and aquatic biomasses serve a wide range of societal needs – from human food to animal feed and fibre (e.g. paper, packaging) – to chemicals and materials, most of which represent higher economic value than energy products. Thus, while there is merit in addressing the environmental impact of fossil-based energy by substitution with biomass, there is also the need to recognise that such energy applications of biomass may not represent the highest economic value that can be derived from limited supplies. It is therefore clear that biomass-derived products and energy have to compete for a limited supply of plant and aquatic biomass, mostly due to limited rainfall and arable land in South Africa. The aim of sustainable development using biomass resources should be to maximise the economic, environmental and societal benefits derived from available biomasses and arable land.

The study covered concerns pertaining to the availability of biomass and the size of the tradable biomass market in South Africa. These values were translated into potential scale of bioenergy production and the economic viability thereof, in comparison to fossil-based energy sources. The study also proposed a process for settling potential biomass disputes, which will apply not only to biomass application to energy, but also all to other competitive utilisation of available biomass and arable land. The study also benchmarked the South African bioenergy sector (electricity, biofuels) against international counterparts, while the local institutional and legislative environments were reviewed to identify supporting and/or impeding characteristics. A research trajectory was proposed to advance the contribution of bioenergy to renewable energy production in South Africa. Finally, the perspectives on biomass utilisation were expanded beyond bioenergy applications, where a methodology for competitive allocation of biomass resources to a range of applications, referred to as the Biomass Utilisation Master Plan (BUMP) and realisation of such applications on industrial scale, was proposed.

Bioeconomy Metrics and Survey. This project was initiated in partnership with the Department of Science and Technology to develop a framework for bioeconomy metrics and survey. The ultimate goal is to determine the indicators that are useful to monitor the bioeconomy contribution to the economy of South Africa. The metrics being developed are intended to cover the entire bioeconomy value-chain (inputs, activities, outputs, linkages/interactions and the impacts). In terms of the scope, all the actors within the national system of innovation (government, higher education institutions, business, science councils, etc.) will be covered. The industrial sectors that will be considered are guided by the bioeconomy strategy, namely: biotechnology, agriculture and new materials (nanobiotech). The output of the 2014/15 work is a framework that can be used to design indicators to measure the contribution of the bioeconomy to the South African GDP.

5. INNOVATION FOR ECONOMIC DEVELOPMENT AND SOCIAL UPLIFTMENT

5.1 Policy Thrust 5: Innovation for Economic Development and Social Upliftment

Enhancing the Contribution of Indigenous Knowledge Systems to Realising the Targets of the National Development Plan. Promising indigenous innovations have the potential to complement conventional technologies in addressing the three key challenges in South Africa, which are poverty, unemployment and inequality. The purpose of the study was therefore to identify indigenous flagship projects or initiatives with the potential to contribute to selected targets of the NDP, such as healthcare, education and training, inclusive and integrated rural economy, economy and employment and positioning South Africa in the world. Study findings have revealed an alignment of many indigenous flagship projects with the targets, suggesting that an indigenous knowledge system (IKS) is very important. Challenges and opportunities inherent to the role of IKS were also identified. Finally, the study has proposed interventions to maximise the impact of IKS flagship projects on the targets of the NDP.

6. GENDER MAINSTREAMING IN SCIENCE, TECHNOLOGY AND INNOVATION

6.1 Policy Thrust 6: Gender Mainstreaming

Recent reviews of the science, technology and innovation landscape in South Africa confirm that the functioning of the NSI is at present, impeded by a shortage of high-order skills, in the areas of design, engineering, entrepreneurship and management. In spite of increasing enrolments in the Science, Engineering and Technology fields of study by both genders, empirical evidence shows under- representation of women professionals in certain categories of science and engineering fields. In the year under review, NACI initiated a ***"Diagnostic Assessment of the Availability of High-End Science, Engineering and Technology Skills in the Public Sector"*** study. This expansive assessment into government departments, provincial and local government, state-owned enterprises, science councils and municipalities seeks to understand the availability of certain categories of SET skills against the backdrop of the extent of transformative change in terms of race and gender in the NSI. Through labour market information, the diagnostic review will assist policy planning for transformation and skills in the NSI.

7. SUMMARY OF NACI 2014-15 PERFORMANCE

The overall performance of the NACI on the projects that are reflected on the 2014/15 annual performance plan is shown in Table 1. The term of the outgoing Council officially ended during the end of 2013/14 financial year, although it was extended until the end of July 2014. As a result, the targets of the 2014/15 annual performance plan were set broad to prevent committing the new Council on the outputs to deliver upon. Some of the outputs, as a result, changed the focus. An example being the planned report on the sustainability of upscaling the introduction of tablets to support mathematics and science in schools. This project was later changed to the ***Skills Sustainability and Government Planning of Flagship Projects*** at the beginning of the 2014/15 financial year.

Some of projects that were terminated at the beginning of 2014/ 15 financial year are a report on the actual support needed for growth of innovation-based small, medium and microenterprises; and a report on the sustainability of upscaling the introduction of tablets to support maths and science in schools. Some projects introduced by the outgoing Council at the beginning of 2014/15 financial year are the South African National Innovation Portal Framework (draft completed) and Development of a Foresight Framework for Science, Technology and Innovation Policy (completed).

Table 1: Summary of the NACI's 2014-15 Financial Year Performance

STRATEGIC OBJECTIVE	ANNUAL TARGET	STATUS AT THE END OF THE 2014-15 FINANCIAL YEAR	COMMENTS ON DEVIATION
To evaluate and advise on structuring, governance and co-ordination of the national system of innovation	Report and advice letter on structure, governance and co-ordination of the NSI	Deferred to the new financial year	The work on this project will form part of the White Paper on Science and Technology review process in 2015/16 financial year
To evaluate and advise on monitoring, evaluation and indicators	Booklet on the assessment of the state of the NSI	Completed	
	Advice letter on the state of the NSI	Partially completed	Additional background information had to be collected to address the specific issues requested by the Minister on the "Request for advice on the results of the 2012/13 Research and Experimental Development Survey"
To evaluate and advise on innovation for economic development and social upliftment	Report on the actual support needed for growth of innovation-based small, medium and microenterprises	Terminated	It was felt that most of the issues had already been addressed by the previous NACI study (An assessment of gaps in policy instruments that support growth of innovate-based SMMEs in South Africa)
	Report on the IKS and its impact on ecosystem goods and services, social development and economic growth	Partially completed	The scope was changed to focus more on existing IKS flagship projects (Contribution of IKS to realising the targets of the NDP)

STRATEGIC OBJECTIVE	ANNUAL TARGET	STATUS AT THE END OF THE 2014-15 FINANCIAL YEAR	COMMENTS ON DEVIATION
To assess and identify competitive niches for new innovations in the bioeconomy sector	Report on policy landscape and sustainability assessment of bioeconomy opportunities	Completed	Focus on this output was narrowed to "Biomass sustainability for future biorefineries" and "Bioeconomy metrics and survey". Although the first report is complete, the second component is ongoing.
	Proceedings report and advice letter on policy landscape and sustainability assessment of bioeconomy opportunities	Partially completed	Advice letter drafted, to be finalised in 2015-16 financial year
	Booklet on the South African biotech directory	Completed	
To identify the infrastructure needs for a competitive national system of innovation	Report, proceedings report and advice letter on physical infrastructure requirements in SET and medical technologies for a competitive economy	Terminated	The subject matter fell within the jurisdiction of another organisation
To promote mathematics, science and technology in the education and training value-chain with a view to supporting the NSI	Report on skills in the technology sector	Ongoing project	The focus of the investigation changed to assessing skills sustainability and government planning of flagship projects. The work is ongoing
	Report on the sustainability of upscaling the introduction of tablets to support mathematics and science in schools	Terminated	It was agreed that the scope of the investigation would have covered a new project on up-scaling tablets in schools, therefore it would not have been suitable to assess scaling up at that stage

STRATEGIC OBJECTIVE	ANNUAL TARGET	STATUS AT THE END OF THE 2014-15 FINANCIAL YEAR	COMMENTS ON DEVIATION
To promote gender mainstreaming in the science, technology and innovation environment	Report on the face of STI: tracking the attrition of professionals in the science sector	Ongoing project	The work on gender in STI is ongoing
	Advice letter/presentation on benchmarking the policy environment for gender mainstreaming in the science, technology and innovation system	Completed	

8. LOCAL (EVENTS) STRATEGIC ENGAGEMENTS

As part of its role, the NACI continued to engage with stakeholders on various strategic issues through meeting chairpersons of entities, attending budget vote, presenting annual performance plans, and consulting stakeholders on the national innovation portal. Details on this can be viewed in Table 2 below.

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

EVENT	LOCATION	ATTENDEE	DATE
Minister's meeting with the chairpersons of public entities, councils/boards and CEOs	CSIR International Convention Centre (Pretoria)	Dr S Lennon	18 July 2014
Department of Science and Technology budget vote	Parliament, Cape Town	Dr S Lennon, Mr G Rothschild, Ms N Maome	22 July 2014
Annual Performance Plan presentation to Portfolio Committee on Science and Technology	Parliament, Cape Town	Dr S Lennon, Adv. L Zondo, Mr P Letaba and Ms N Maome	31 July 2014
Presentation of NACI 2013/14 annual report to the Portfolio Committee on Science and Technology	Parliament, Cape Town	Prof. C de la Rey, Prof. J Thomson, Dr A Jammine, Dr N Moleleki, Ms N Maome	15 October 2014
DST-NRF Centre for Excellence in Scientometrics and Science, Technology and Innovation Policy, Scientific Launch	Stellenbosch	Mr P Letaba Ms N Maome	6-7 November 2014
Stakeholder consultations on the National Development Innovation Portal Framework (SAQA, CHE, Companies and Intellectual Property Commission, Council on Higher Education, DST, HSRC)	Pretoria	NACI Secretariat and Experts	29 January 2015
Stakeholder consultations on the Development of National Innovation Portal Framework (South African Qualifications Authority, Department of Higher Education and Training, Department of Science and Technology and Human Science Research Council)	Pretoria	NACI Secretariat and Experts	5 February 2015
Stakeholder consultations on the National Development Innovation Portal Framework (Centre of Excellence in Science, Technology and Innovation Policy)	Stellenbosch	NACI Secretariat	27 February 2015

9. INTERNATIONAL LIAISON

During the 2014/15 financial year, the NACI Secretariat staff participated in the annual meetings of the two Organisation of Economic Development and Co-operation (OECD) working groups of the Committee for Scientific and Technological Policy (CSTP), namely: National Experts on Science and Technology Indicators (NESTI) and Innovation and Technology Policy (TIP). Both meetings were held at the OECD headquarters in Paris, France. Some recent topical issues of focus for the NESTI working group are the revision of the Frascati Manual (standard document for R&D surveys), enhancement of the policy analysis impact of STI data infrastructures and measurement of the R&D outputs. The revision of the Frascati Manual also seeks to incorporate the Systems of National Accounts (SNA) approach for capitalisation of research and development. These NESTI efforts complement NACI's efforts on improvement of STI indicators and data infrastructure, in order to monitor and evaluate the state of the national system of innovation.

Some focus areas of TIP working groups are knowledge transfer across the Triple Helix (higher education, government and the industry), innovation strategies, systems of innovation, open innovation as well as evaluation and impact assessment of STI policies. These issues are also part of NACI's focus.

Table 3: NACI's participation in international events

EVENT	LOCATION	ATTENDEE	DATE
OECD Working Party of National Experts on Science and Technology Indicators meeting	Paris, France (OECD)	Mr P Letaba	3-6 June 2014
OECD Working Party on Innovation and Technology Policy meeting	Paris, France (OECD)	Ms R Maila	18-20 June 2014
International Conference on Engineering Technology & Innovation (ICE 2014)	Bergamo, Italy	Mr P Letaba	23-25 June 2014

Part C: Governance Information

1. GOVERNANCE REPORT

In ensuring a proper oversight on the NACI projects and activities, the Council meets once per quarter whereas the Executive Committee meets at least twice per quarter. The information below shows the record of meetings' attendance:

1.1 MEETINGS:

NACI Council meetings 2014/15

Table 4: Current Council, July 2014 to 2018

Member	Meetings Attended		
	30 Sep 2014	17 Nov 2014	19 Feb 2015
Adv. Louisa Zondo	√	√	√
Prof. Cheryl de la Rey (Chairperson)	√	√	√
Prof. Jennifer Thomson	√	√	√
Mr Sim Tshabalala	x	x	√
Mr Garth Strachan	√	√	x
Prof. Olive Shisana	√	x	x
Dr Sibusiso Sibisi	√	√	√
Ms Nonkululeko Nyembezi-Heita	x	√	√
Mr Andila Ngcaba	√	x	x
Mr Kevin Nassiep	√	√	√
Mr Dhesigen Naidoo	√	√	√
Ms Zanele Monnakgotla	√	x	√
Dr Shadrack Moephuli	x	x	√
Dr Azar Jammine	√	√	√
Prof. Glenda Gray	√	√	x
Prof. Anton Eberhard	√	√	x
Prof. Roseanne Diab	√	√	x
Ms Claire Busseti	√	√	√
Dr Albert Van Jaarsveld	√	x	x

Table 5: Outgoing Council, 2010 to July 2014

Member	Meetings Attended
	21 May 2014
Adv. Louisa Zondo	√
Prof. Jennifer Thomson	√

Member	Meetings Attended
	21 May 2014
Ms Nonkululeko Shinga	x
Mr Geoff Rothschild	x
Prof. Gerhardus Prinsloo	√
Prof. Francis W Petersen	√
Prof. Michael Pepper	x
Prof. Lineo Vuyisa Mazwi-Tanga	√
Prof. Helen Laburn (late)	x
Dr Azar Jammine	√
Mr Kuseni Dlamini	x
Dr Steve Lennon (Chairperson)	√

NACI Exco meetings 2014/15

Table 6: New Exco 2014 to 2018

Member	Meetings Attended	
	3 Feb 2015	24 Mar 2015
Prof. Jennifer Thomson	√	√
Mr Garth Strachan	√	x
Mr Dhesigen Naidoo	√	√
Prof. Cheryl de la Rey (Chairperson)	√	√

Table 7: Outgoing Exco 2010 to July 2014

Member	Meetings Attended			
	23 April 2014	19 May 2014	19 June 2014	23 July 2014
Ms Nonkululeko Shinga	√	x	√	x
Mr Geoff Rothschild	√	√	√	√
Dr Steve Lennon (Chairperson)	√	√	√	√

1.2 GOVERNANCE OF INFORMATION TECHNOLOGY:

The information technology service and governance functions for NACI are managed by the Department of Science and Technology's Corporate Services branch. The organisation conducts its advisory function in a way that complies with DST policies on information and communication technology, as well as policies and best practices on records' management.

1.3 SUSTAINABILITY:

The sustainability of NACI depends on its relevance to the changing science, technology and innovation landscape. The approach on long-duration committees was abandoned as a way to induce flexibility and to enable the organisation to be agile in addressing the key issues concerning the national system of innovation. The current project management framework ensures NACI's ability for continued access to the relevant expertise on specific projects that are of a short duration. As NACI is not primarily a research organisation, but an advisory structure that aggregates strategic information on innovation in South Africa from various sources, the experts enable the NACI to have access to such information.

The relevance of NACI within NSI is articulated in its mission of being the premier advisory body to the Minister of Science and Technology and government on all science, technology and innovation policy matters. This can only be achieved through the high quality and systemic advises that address issues of national importance such as the government outcomes and the National Development Plan targets. As a result, NACI will focus on a few high-impact projects as opposed to a large quantity of studies. The review of the 1996 White Paper on Science and Technology, as well as the development of a framework that will guide the development of a decadal plan on science technology and innovation are examples of such high impact projectswhich NACI is initiating in consultation with the Minister.

1.4 COMPLIANCE WITH LEGISLATION:

NACI derives its mandate from the National Advisory Council on Innovation Act (Act No. 55 of 1997). This Act directs NACI to submit an annual report on its activities, including an assessment of the extent to which its objectives have been achieved, to the Minister of Science and Technology. NACI also complies with pertinent provisions of the Science and Technology Amendments Act, 2014 (as amended). NACI has no specific directives arising from an order of a Court of Law with which it has to comply.

Part D: Human Resource Management

1. HUMAN RESOURCES

In order to implement its advisory programme, the Council is supported by the head of the Secretariat (Chief Executive Officer) and the Secretariat staff (Figure 4) who are appointed on a permanent basis in terms of the Public Service Act as stipulated by the NACI Act (Act No. 55 of 1997). In addition to the Secretariat support, the NACI Council also uses experts from different fields of relevance in its advisory programme.

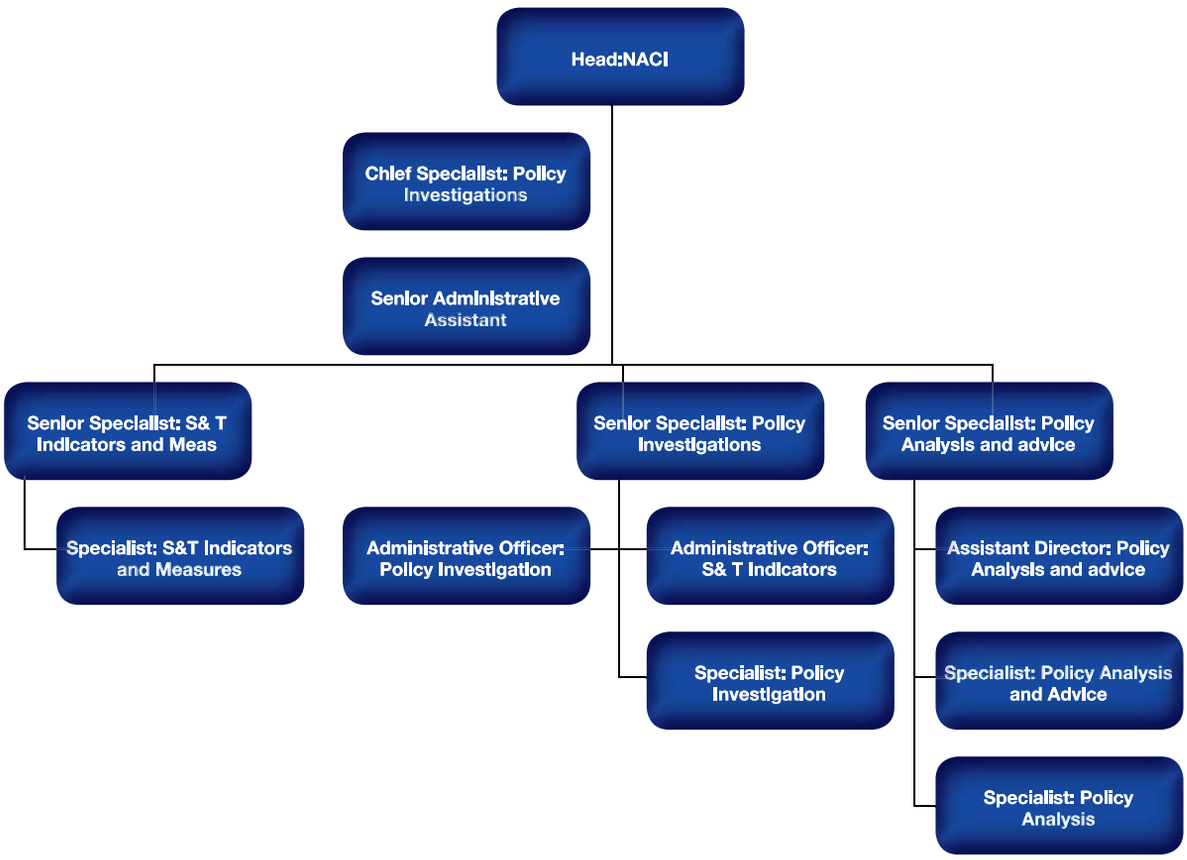


Figure 4: The operational structure of the NACI Secretariat

Part E: Financial Information

1. FINANCIAL RESOURCES

NACI is not a scheduled entity based on the Public Finance Management Act (PFMA), although its financial conduct adheres to the PFMA guidelines. Furthermore, although the Chief Executive Officer is an Accounting Officer, most of the organisation's corporate services (procurement, Treasury function, internal auditing, financial controls, etc.) are performed by the Department of Science and Technology's Corporate Services branch. As a result, the financial report (Table 8) shows only the information on budget, expenses, commitments and available funds.

The expenditure on goods and services for the 2014/15 financial year was R10.9 million, resulting in the saving of R6.9 million from the annual budget of R18.3 million. About 35% of the funds not spend is Compensation of Employees, and the result of a vacant CEO position. The under- expenditure on goods and services is as a result of projects' reprioritisation, taking into account the new focus areas of the NACI. In line with the government's cost-cutting measures, most of the NACI's projects' work during the 2014/15 financial year was done internally, working closely with the individual experts as opposed to big project teams. This resulted in significant savings.

Table 8: The NACI budget and expenditure breakdown as of 31 March 2015

Description	Expenses	Commitments	Budget	Available Funds
	(R'000)	(R'000)	(R'000)	(R'000)
Compensation of Employees	7 639	0	10 034	2 395
Goods and Services	3 262	473	8 223	4 488
Total	**10 901**	**473**	**18 257**	**6 883**

APPENDICES

1. APPENDIX A: MEMBERS OF THE NACI COUNCIL 2014/15

NAME	ORGANISATION
Outgoing Council 2010 - 2014	
Dr Steve Lennon (Chairperson)	Eskom Holdings SOC
Mr Kuseni Dlamini	Times Media
Dr Azar Jammine	Econometrix LTD
Prof. Helen Laburn (*late*)	University of the Witwatersrand
Prof. Lineo Vuyisa Mazwi-Tanga	Cape Peninsula University of Technology
Prof. Michael Pepper	University of Pretoria
Prof. Francis W Petersen	University of Cape Town
Prof. Gerhardus J Prinsloo	Durban University of Technology
Mr Geoff Rothschild	Johannesburg Stock Exchange
Ms Nonkululeko Shinga	Department of Trade and Industry
Prof. Jennifer A Thomson	University of Cape Town
Adv. Louisa Zondo	Bertha Gxowa Foundation
New Council 2014 - 2018	
Prof. Cheryl de la Rey (Chairperson)	University of Pretoria
Ms Claire Busetti	SiMODiSA
Prof. Roseanne Diab	Academy of Science of South Africa (ASSAf)
Prof. Anton Eberhard	University of Cape Town
Prof. Glenda Grey	Medical Research Council
Dr Azar Jammine	Econometrix LTD
Dr Shadrack Moephuli	Agricultural Research Council
Ms Zanele Monnakgotla	Freewi
Mr Dhesigen Naidoo	Water Research Commission
Mr Kevin Nassiep	South African National Energy Development Institute (SANEDI)
Mr Andile Ngcaba	Dimension data
Ms Nonkululeko Nyembezi-Heita	IchorCoal NV
Dr Sibusiso Sibisi	Council of Scientific and Industrial Research
Prof. Olive Shisana	Human Sciences Research Council
Mr Garth Strachan	Department of Trade and Industry
Mr Sim Tshabalala	Standard Bank
Prof. Jennifer Thomson	University of Cape Town
Ms Louisa Zondo	Bertha Gxowa Foundation
Dr Albert Van Jaarsveld	National Research Foundation

2. APPENDIX B: MEMBERS OF THE EXECUTIVE COMMITTEE 2014/15

NAME	ORGANISATION
Outgoing Exco 2010 - 2014	
Dr Steve Lennon (Chairperson)	Eskom Holdings SOC
Mr Geoff Rothschild	Johannesburg Stock Exchange
Ms Nonkululeko Shinga	Department of Trade and Industry
New Exco 2014 - 2018	
Prof. Cheryl de la Rey (Chairperson)	University of Pretoria
Mr Dhesigen Naidoo	Water Research Commission
Mr Garth Strachan	Department of Trade and Industry
Prof. Jennifer Thomson	University of Cape Town

3. APPENDIX C: NACI PANELS OF EXPERTS 2014/15

3.1 EXPERTS FOR THE DEVELOPMENT OF 2014 SOUTH AFRICAN SCIENCE, TECHNOLOGY AND INDICATORS BOOKLET

NAME	ORGANISATION
Dr Azar Jammine (Project Leader)	Econometrix
Prof. Anastassios Pouris	University of Pretoria

3.2 EXPERTS' PANEL FOR THE DEVELOPMENT OF THE NATIONAL INFORMATION INNOVATION PORTAL FRAMEWORK

NAME	ORGANISATION
Prof. Judy Backhouse	University of the Witwatersrand
Ms Ela Romanowska	University of the Witwatersrand
Prof. Frikkie van Niekerk	University of North West

3.3 EXPERTS' PANEL FOR GENDER MAINSTREAMING IN SCIENCE, TECHNOLOGY AND INNOVATION

NAME	ORGANISATION
Prof. Amanda Gouws	Stellenbosch University
Dr Romilla Maharajh	National Research Foundation
Adv. Louisa Zondo	Bertha Gxowa Foundation

3.4 EXPERTS' PANEL FOR THE SKILLS SUSTAINABILITY AND GOVERNMENT PLANNING OF FLAGSHIP PROJECTS

NAME	ORGANISATION
Dr Andre Kraak	University of the Witwatersrand
Dr Anthony Gewer	Culima Institute
Prof. Salim Akoojee	University of the Witwatersrand
Ms Carmel Marock	Singizi Consulting

3.5 EXPERTS' PANEL FOR THE INFRASTRUCTURE FOR RESEARCH AND INNOVATION

NAME	ORGANISATION
Dr Sarah Mosoetsa	University of the Witwatersrand
Mr Kiran Odhav	North West University
Prof. Krish Bharuth-Ram	South African Astronomical Observatory

3.6 EXPERTS' PANEL FOR THE INFRASTRUCTURE FOR BIOECONOMY METRICS AND SURVEY

NAME	ORGANISATION
Dr Nazeem Mustapha	Human Sciences Research Council
Mr Dennis Baloyi	Statistics South Africa
Dr Antonel Olckers	DNAbiotec (Pty) Ltd
Dr Yul Derek Davids	Human Sciences Research Council
Prof. Jennifer Thomson	University of Cape Town
Dr Sarah Grobbelaar	Stellenbosch University
Prof. David Kaplan	University of Cape Town

3.7 EXPERTS PANEL FOR BIOMASS SUSTAINABILITY FOR FUTURE ENERGY AND BIO-REFINERIES IN SOUTH AFRICA

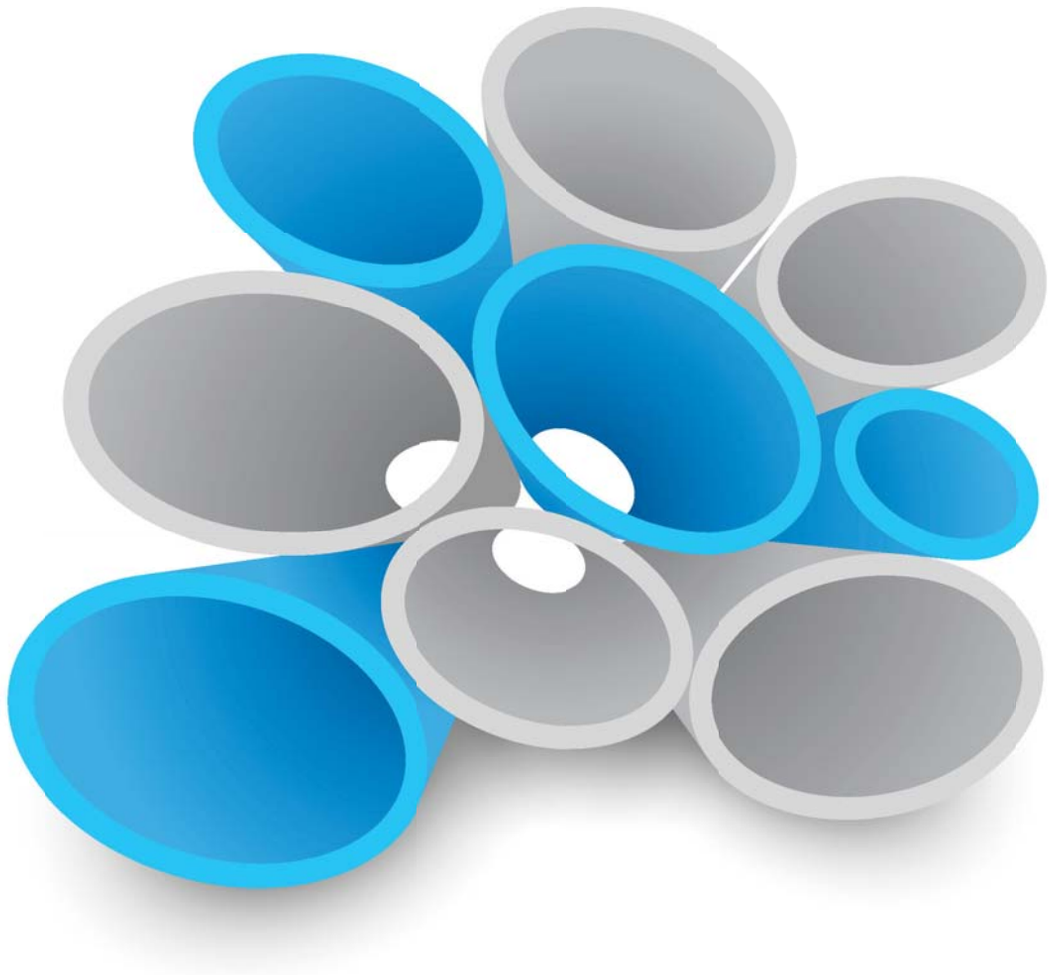
NAME	ORGANISATION
Prof. Johann Görgens	Stellenbosch University
Prof. Alan Brent	Stellenbosch University
Mr Wim Hugo	South African Earth Observation Network
Dr William Stafford	Council for Scientific and Industrial Research

4. APPENDIX D: COMPLETED RESEARCH, DESKTOP STUDIES & POSITION PAPERS IN 2014/15

1	Development of the National Information Innovation Portal Framework
2	Development of a Foresight Framework for Science, Technology and Innovation
3	Enhancing the contribution of Indigenous Knowledge Systems to realising the targets of the National Development Plan
4	South African Science, Technology and Innovation Indicators Booklet, 2014

5. APPENDIX E: WORKSHOPS & SEMINARS IN 2014/15

	NACI Indicators and Infrastructure for the NSI Workshop (10 April 2014)



LIST OF ACRONYMS

ASSAf	Academy of Science of South Africa
CEO	Chief Executive Officer
CHE	Council on Higher Education
CIPC	Companies and Intellectual Property Commission
CSIR	Council for Scientific and Industrial Research
DST	Department of Science and Technology
EXCO	Executive Committee
PFMA	Public Finance Management Act
GDP	Gross Domestic Product
HSRC	Human Sciences Research Council
NACI	National Advisory Council on Innovation
NDP	National Development Plan
nGAP	New Generation of Academics Programme
NRF	National Research Foundation
NSI	National System of Innovation
OECD	Economic Cooperation and Development
PFMA	Public Finance Management Act
PhD	Doctor of Philosophy
R&D	Research and Development
S&T	Science and Technology
SADC	Southern African Development Community
SAQA	South African Qualifications Authority
SET	Science, Engineering and Technology
SMME	Small, Medium and Micro-sized Enterprise
STI	Science, Technology and Innovation

Notes