Annual Report
2013-2014

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**

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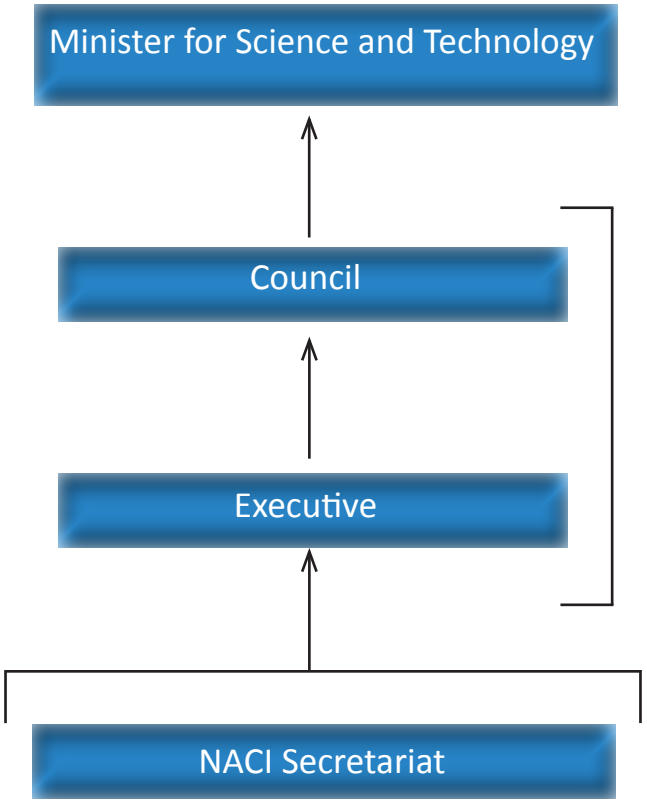


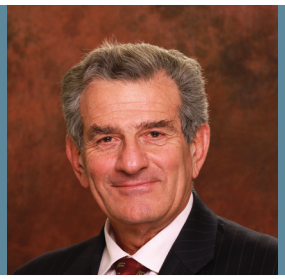
Expert Panels/ Project Teams:

- Bioeconomy Policies & Strategies
- Gender Mainstreaming in STI
- Skills in Mathematics,
- Science & Technology
- Infrastructure for Research & Innovation
- Innovation for Economic Development & Social Upliftment
- Monitoring, Evaluation & Indicators
- Development of a National Innovation Framework

THE NACI COUNCIL

Dr. Steve Lennon
Chairman

Mr. Kuseni Dlamini



Dr. Azar Jammine

Prof. Helen Laburn

Prof. Lineo Mazwi-Tanga

Prof. Michael Pepper

Prof. Francis Petersen

Prof. Mamokgethi Phakeng

Prof. Gerhard Prinsloo

Mr. Geoff Rothschild

Ms. Nonkululeko Shinga

Prof. Jennifer Thomson

Adv. Louisa Zondo

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MESSAGE FROM THE MINISTER FOR SCIENCE AND TECHNOLOGY: HONOURABLE NALEDI PANDOR

There is growing appreciation of the importance of innovation policy in the economies of developing nations. In government I am constantly involved in debates on the implications of different types of innovation for economic policy. I argue for more funds for R&D, the commercialisation of new technologies, and science policies that spur innovation. I also argue for the importance of intellectual property rights protection regimes that are pro-innovation, digital policies to enable robust deployment of ICT platforms, and government procurement policy and competition policy that fosters non-discriminatory market access and foreign direct investment. I see these debates intensifying as we search for new sources of economic growth in order to respond, in particular, to rising unemployment and inequality.

These debates have forced me to reflect on the effectiveness of public policy in the innovation process. I have no doubt that NACI has as well. In the last year, NACI has considered such topics as legislative harmony in the biotechnology space, the need to improve the technical skills pipeline to support innovation activity, coordinated efforts to streamline support to the SME sector with a view to encouraging entrepreneurship, gender mainstreaming in the academic and research workplace and research and innovation infrastructure.

I welcome proposals by NACI for a National Innovation Framework to refocus our innovation system, as well as the suggested suite of indicators to measure progress.

The innovation policy measures we have pursued require review from time to time. As far as the policy work that NACI has put before me is concerned, I look forward to facilitating debates on platforms for dialogue such as our next science, technology and innovation summit. In addition, and in keeping with the advisory mandate of NACI, I will be discussing appropriate policy measures with my Cabinet colleagues.

I see the framework for engagement that NACI concluded with the Academy of Sciences for South Africa (ASSAf) in 2013 as a sign of a future path to take. I encourage NACI to focus on relationship building within the innovation system that is central to the fulfillment of its statutory role.

Finally, I take this opportunity to convey my gratitude to the outgoing NACI Council members under the sterling leadership of the Chairman, Dr Steve Lennon. The completed policy work is a testament to the quality of leadership we as Cabinet had at our disposal. I thank the NACI experts who have assisted us in gaining a deeper understanding of subject matter issues, and who in working with the Secretariat strengthened the capacity of our own innovation policy skills. I thank my own staff at the Secretariat for a job well done in completing the year's programme.

CHAIRMAN'S OVERVIEW: DR STEVE LENNON

Dear Innovation Stakeholder

I am pleased to present the Annual Report of the National Advisory Council on Innovation (NACI) 2013/14. As the outgoing Chairman of NACI, this Annual Report presents me with an opportunity to reflect on what NACI has achieved over the past four years – this being the end of term of the outgoing Council. Above all, this report gives an account of progress and challenges in the areas of the national system of innovation on which we seek to improve. We believe that innovation should be the centrepiece of the economic agenda in South Africa and every developing nation. At the end of World War II, technological innovation was the key driver of more than half the economic growth in the developed world. Technological innovation accounts for growth in output and productivity in many economic sectors, manufacturing being a case in point. A key enabler of this growth is the availability of technology, entrepreneurship and innovation skills. It is particularly well established that these skills require a solid base of science, engineering and mathematics expertise.

A key initiative which will drive South Africa's economic, social and environmental development over the next 30 years is the National Development Plan – Vision 2030. The NDP places great emphasis on innovation; however, we tend to think of innovation in terms of its parts, rather than the whole. We speak of research and development innovation, technological innovation, design innovation, product and process innovation, education and training innovation, entrepreneurial innovation. However, for our economy to truly thrive, it is critical for us to realise that innovation is embedded in the performance of the entire economic system, which in turn has to be fully integrated with the National System of Innovation (NSI). Therefore, we cannot hope to be an innovation driven economy by focusing only on the individual parts at any time. We have to look at the totality of human capital, research and development, intellectual property, venture capital, commercialisation of know-how, the enabling environment for entrepreneurship and the policy and regulatory space as integral parts of the value chain. It is for this reason that in 2013/14 Council presented a holistic Innovation Framework for the system as a whole. This framework, which is summarised in this report, will hopefully enable alignment across all stakeholders in the NSI with a view to achieving truly sustainable development for the South African economy.

Traditionally, government's role in the innovation value-chain has been more pronounced in some parts than in others; a clear and obvious role exists in driving research and development as well as technology for service delivery and national security. We believe that in future, government should intensify its role in nurturing a tax and business environment that is conducive to entrepreneurial risk taking and building a globally competitive economy. In particular, government should build on initiatives to foster product and process innovation in the manufacturing, biotechnology and mining sectors, to develop research and innovation infrastructure such as cyber and energy infrastructure, and to foster public service innovation geared towards the delivery of essential services. We hold the view

that, as innovation policy becomes more robust in South Africa; its strength must lie in its implementation through a strong and aligned partnership among all role players. Most importantly, we believe too that the private sector needs to play a far greater role in the National System of Innovation.

Highlights

Looking back, I have no doubt that the establishment of NACI though the NACI Act in 1997 has had a profound effect on the country's innovation capacity. NACI has through its work been instrumental in the following policy and legislative initiatives of government: the peer review of the South African NSI by the OECD; the development of the Ten Year Innovation Plan; the establishment of the Technology Innovation Agency; the Intellectual Property Rights for Publicly Funded Research Act; the establishment of a monitoring and indicators framework for science and technology; the development and maintenance of National Innovation Infrastructure; the bioeconomy and the introduction of tax incentives for research and development.

Beyond the purview of the Ministry for Science and Technology, NACI has made contributions to standards for open source software to address the digital divide, the strengthening of the human capital base, the empowerment of women and gender mainstreaming, consumer protection in South Africa, biotechnology and the use of genetically modified organisms, to name only a few.

Council continues to be mindful of the considerable challenges that face our country, in particular, not least of which is the high level of unemployment and widespread poverty. Our ongoing dialogue has been premised on the assertion that innovation is paramount to economic success. In addition to the framework mentioned above, in the year under review, NACI has provided policy advice on the following pertinent topics:

i. Bioeconomy policies and legislation, drawing particular attention to the need for legislative harmonisation across government.
ii. Support for SMMEs through the streamlining of supportive instruments and the establishment of a clear links to the innovation cycle.
iii. Gender mainstreaming, drawing attention to the gross under representation of women in the higher echelons of the academic hierarchy and in the technology based workplace.
iv. The shortage of (innovation) skills, specifically along the technical and vocational training value-chain.
v. A working model for investment in innovation and research infrastructure to, amongst others, foster a positive investment climate for research and innovation, as well as to enhance social impact considerations in planning for research and in planning for innovation.
vi. Monitoring and evaluation in the NSI: NACI suggests a wider array of indicators to evaluate holistically the embedded performance of the NSI in the economy.

Focus on NSI Performance

Inspite of its comparatively small size, the South African NSI shows globally competitive strengths in specific science, technology and innovation areas. In addition, indicators show the following: an increasing number of science, engineering and technology PhDs being awarded; increasing numbers of South African patents being registered with the United States Patent and Trademark Office; improvements in the technology balance of payments; increased efficiency in research productivity, evidenced by the growing number of high impact publications, as well as improvements in the overall enrolments and graduations in science, engineering and technology fields of study. I believe that this shows that the steady increase of input drivers in recent years is beginning to show results. This in turn implies that there is a solid base from which the National System of Innovation is able to support the aspirations of the National Development Plan.

We are, however, challenged by perceptions arising from international comparative studies, which suggest a picture gloomier than the objective reality, as demonstrated in the recently released World Economic Forum's Global Information Technology Report, 2014. There are equally clear opportunities for improvements in the system. Of critical importance is the need to improve the measuring system of the NSI, as the current system leans towards research and development and therefore falls short in terms of measuring the entire innovation domain. The impact of the NSI on the quality of life, economic growth, environmental sustainability and entrepreneurship reveals glaring gaps. Since measurement is a key driver of policy direction, NACI has suggested a new set of indicators in the knowledge economy domain for the NSI. NACI is further of the view that the implementation of the System Framework summarised in this report will enable the holistic and efficient evolution of the system in an integrated fashion.

Future View

We have continued to call for the NSI to embrace the aspirations of the NDP. During its term, Council has had an ambitious work programme, exploring different facets of the innovation value chain and focusing strategically on: coordination in the national system of innovation; science and innovation initiatives for development; agriculture, food security and the bioeconomy; research and innovation infrastructure and skills development; transformation and gender issues. The current NACI Council's term ends on 31 July 2014. I anticipate that the incoming Council will finalise the NACI Strategy for 2015/16–2019/20 to determine the scope of work to be implemented during its four

year term. In this regard there is already a core of ongoing work which will doubtless be complemented by the fresh new ideas which will surface from the new members of the Council.

I anticipate that the new Council will herald a more significant role for NACI into the future. In recent times we have seen the introduction of the NACI CEO role which sets the scene for a NACI that is more independent of the Department of Science and Technology while still fostering a strong implementation partnership with the DST and other government departments. Current plans for NACI to host an innovation portal and become the custodian of system wide data strategy and interpretation, coupled with a stronger role in advising across government, through the Minister for Science and Technology, will reinforce NACI's role as a brains trust for the system.

Acknowledgements

In my two terms as Chairman of the Council I have seen NACI grow from strength to strength and I would like to think that a strongly positive contribution to the policy environment has been made over this period. At the same time, I have seen the NACI Secretariat develop into an effective team of highly qualified specialists who arguably form the best collective skills base for innovation policy research in the country. I am particularly pleased with the progress Council made last year. The councillors worked tirelessly with the Secretariat and subject matter specialists in concluding a long term and ambitious body of work. This has resulted in advice which I anticipate will endure in impact for years to come. My gratitude goes to the previous and current Ministers of Science and Technology whose dedication to the portfolio for science, technology and innovation as well as the inspiration and guidance they provided is greatly appreciated. I extend further thanks to my colleagues in Council. I am humbled by the manner in which Council has worked effectively as a cohesive unit, drawing on the strengths of each member without placing undue weight on any one individual. I thank the experts within the various committees of Council who have facilitated the discharge of Council responsibilities and provided in-depth understanding of specific focus areas. My greatest appreciation goes to staff in the NACI Secretariat for their dedication and support, effectively ensuring the completion of our work programme, often without the luxury of permanent leadership.

THE STATE OF THE NATIONAL SYSTEM OF INNOVATION

Introduction

The White Paper on Science and Technology, 1996, sets out a long-term vision for government on the role of innovation in enhancing economic efficiency. However, according to recent reviews of the National System of Innovation (NSI), the compelling vision for an innovation driven economy with a pervasive impact as articulated in the White Paper has neither been achieved nor widely embraced by government departments or Cabinet. The role of business (both established and emerging) has been not been adequately included in the conception or coordination of the NSI.

Notwithstanding, in providing a conceptual framework for an NSI and recommending an institutional support system which included the establishment of the National Advisory Council on Innovation (NACI) in 1997, the White Paper had satisfied the preliminary conditions for an innovation driven economy. The vision expressed in the White Paper is now reinforced by the country's recent blueprint plan for economic development: the National Development Plan (NDP). The NDP articulates the importance of science and technological innovation, education and training innovation, industrial innovation, and social innovation in its 2030 vision.

Challenges facing the NSI

Subsequent to and building on the reviews of the NSI discussed briefly above, NACI Council conducted an assessment of the NSI and the requirements to support a desired end state: "Realising the Vision: Development of a National Innovation Framework (NACI, 2013)". As a point of departure, NACI's assessment confirms that the NSI is at present not positioned to deliver on the goals set out in the NDP, or on national objectives generally. The challenges confirmed in the NACI report are as follows:

- Lack of effective monitoring and evaluation across the NSI, pointing to a need for an evaluation framework with progress indicators for policy prescripts, such as the Industrial Policy Framework, the National Growth Path, the National Development Plan, and the Ten Year Innovation Plan. There is an apparent lack of uniformity in target setting across various policies that presents a challenge when assessing the country's innovation progress in the medium to long term. As a case in point, the time horizon for the Ten Year Innovation Plan is 2018, 2020 for the NGP and 2030 for the NDP.
- Lack of integration across implemention agencies in the NSI. The innovation system is a multiple-actor space, resulting in a misalignment of activities. While there is clear policy convergence at the level of vision and goals, there is considerable policy divergence in respect of action plans and targets.
- There are role players missing from the NSI. The current NSI appears to be the exclusive domain of national government and a few agencies. The business and the not-for-profit sectors have not been adequately integrated.
- Innovation infrastructure (science parks, innovation hubs, research centres, key flagship projects and physical infrastructure) is not properly networked. There is a lack of knowledge flows and beneficial spillovers to various parts of the innovation value-chain.
- Capacity for scaling is weakly developed within government. While governments have a responsibility to adopt and scale up innovation with a potential for positive social impact (social innovation), the nature of government is such that it is the slowest to adopt technology and more often than not it is a non technology innovator.
- Wthin the innovation policy space, the role of design in the innovation process remains largely unrecognised at present.
- The shortage of high quality skills remains a critical weakness of the NSI.
- Slow progress in developing the Gauteng City Region. The spatial proximity of universities, industry and provincial government is advantageous but the links need to be strengthened and made more tangible.
- Underdeveloped support for entrepreneurship. Apart from the poor risk appetite embedded in support instruments, entrepreneurs need to be brought into a community of practice in order to strengthen linkages between business ideas and national needs.

Measurement of the NSI

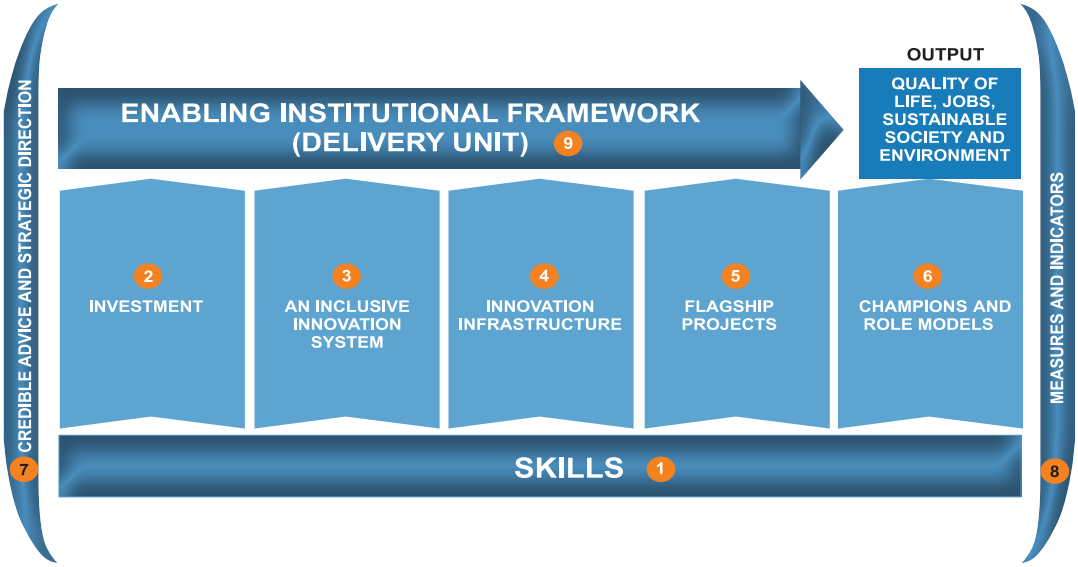
NACI also assessed the measuring framework of the NSI and concluded that the measuring system is limited to innovation driven through research and development activities, with indicators primarily based on the National Research and Development Strategy (NRDS, 2002). This narrow approach limits the perspective of the NSI's embeddedness in the economic system and consequently its intended impact on the quality of life and wealth creation. NACI has therefore suggested a wider array of innovation indicators which includes knowledge demand, amongst others. The newly proposed indicators will take into account innovation output and impact other than that which arises out of research activities.

Refocusing the NSI

NACI's work on the NSI suggests that the system needs to be repositioned in order to be better aligned with the objectives of the NDP. NACI Council proposes a framework for a "refocused

NSI", illustrated in Figure 1 below. NACI's proposed framework advocates that government must place greater emphasis on nine pillars for a refocused system. The first seven pillars are envisaged as enablers for the objectives of quality of life, job creation and sustainable societies and the environment and impact oriented goals of the NSI, namely: skills; investment; an inclusive innovation system; innovation infrastructure; flagship projects; champions and role models; and an enabling institutional framework. The two pillars that remain anchor the credibility of advice and strategic direction as well as system monitoring and evaluation. These are measures and indicators, and credible advice and strategic direction.

Figure 1: Proposed Elements of a Refocused Innovation System



Source: *NACI, 2013: Realising the Vision: Developing South Africa's National Innovation Framework*

Skills: The current skills mix is unbalanced, skewed towards high-end skills at the expense of mainly intermediary skills. A rebalancing of perhaps 30% high-end academic skills and 70% vocational skills to reflect well balanced and broad based skills for innovation and entrepreneurship would be more likely to align to the needs of the economy.

Investment: Funding in the NSI must be easily accessible by small and medium sized enterprise (SME), prospective entrepreneurs and innovators. Greater attention needs to be given to SME access to the Research and Development Incentive as well as support for proposal development. In addition, South Africa's NSI needs to be positioned as a high-tech investment destination.

An inclusive innovation system: South Africa's NSI appears to be the exclusive domain of the science community, the main focus of which has been investment in research and development above all else. Greater leverage can be achieved through an enabling environment for innovation across the broad spectrum of society.

Innovation infrastructure: A new model for research and innovation infrastructure should align the science, technology and innovation infrastructure with the priorities of the NDP. The model should foster harmonisation between private and public sector interests in research and innovation. Increased investment should be focused on closing existing gaps and creating a broad platform of social infrastructure to ensure the inclusivity of the NSI.

Flagship projects: Building on the existing Square Kilometre Array, Solar Thermal, Biotechnology and Food Security and Social Innovation programmes, a portfolio in the NSI of well planned flagship projects could inspire success through a demonstrative impact on the economy.

Champions and role models: Champions and role models must be nurtured to highlight the success of innovation activities countrywide, to inspire upcoming leaders and to create a positive investment climate.

Measures and indicators: Perceptions of South Africa's NSI tend to be defined largely on the basis of international indices; while international comparisons are of value, it is equally imperative that local NSI indicators adequately cover the entire innovation domain. In addition, input and output measures need to be put in place and aligned with national priorities.

Credible advice and strategic direction: Coherence and cooperation between relevant bodies and institutions in the NSI (not limited to S&T) in order to form a cohesive brains trust that will provide strategic direction to the system.

An enabling institutional framework: A consideration must be given to establishing the means for fostering alignment, coherence and coordination in science, technology and innovation matters, integrating the views of all stakeholders in the NSI. A strongly empowered delivery unit anchored in the vision of the NDP is required.

Conclusion:

South Africa has a strong foundation from which to drive the economy towards knowledge innovation intensity. The input and output components of the NSI assessed by NACI include: current R&D capacity; future R&D capacity; imported know-how; technological progress; enrolments in science and technology fields of study; and business performance in key industrial sectors. Overall, the conclusion reached is that the South African NSI is not yet sufficiently able to convert input, in the form of the large resources invested, particularly in R&D and other innovation activities, into a correspondingly sizeable output of product and process innovations. However, the existence of a strong science base, as demonstrated by the country's researchers and the high annual growth in journal publications, suggests a solid knowledge production capacity. NACI's proposed innovation framework, certain support instruments, governance structures, investment patterns and innovation policies must to be optimised to stimulate high level innovation in order to improve quality of life and to create wealth for South African citizens.

CORPORATE OVERVIEW

NACI Mandate

The National Advisory Council on Innovation (NACI) is a statutory advisory board 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, NACI's advisory services are directed at, amongst others:

- Coordination and stimulation of the national system of innovation
- Promotion of cooperation within the national system of innovation
- The 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 cooperation in the fields of science, technology and innovation
- The coordination of science and technology policies and strategies with policies and strategies in other environments
- The structuring, governance and coordination of the science and technology system
- The identification of research and development priorities in consultation with provincial departments and interested parties, and their incorporation in the process of government funding for research and development
- The funding of the science and technology system in respect of its contribution to innovation.

Mission Statement

NACI's mission is to remain the premier advisory body to the Minister for Science and Technology and government on all innovation policy matters, including:

- the contribution of innovation to economic competitiveness
- the contribution of innovation to economic development and social upliftment
- the coordination and coherence in the national system of innovation, thereby contributing to the achievement of national objectives.

NACI gives effect to its mission by utilising evidence-based approaches to enquiry, and making the best use of available resources. NACI's mission finds expression in the motto:

"Innovation for a better future"

Vision

NACI envisions a well coordinated national system of innovation, based on a cohesive advisory system in which innovation is a primary driver for development and an enabler for the country's participation in the global economy.

Values

NACI business is driven by a core set of values, which are:

- excellence of service
- professionalism
- integrity
- respect and people-centredness
- transparency and accountability.

Corporate Objectives

NACI set four corporate objectives in the financial year 2013/14. These were

- to engage with the Minister to identify key issues to be addressed during the financial year
- to engage with the Minister on the implementation of the Ministerial Review Report on Science, Technology and Innovation Landscape in South Africa (2012)
- to pursue the establishment of a central database for innovation knowledge provision through a national repository (a data portal) for all data, information and analytical reports on relevant topics and initiatives
- to pursue the establishment of a research chair or a centre of excellence in innovation policy development.

NACI Council had a special meeting with the Minister for Science and Technology on 15 February 2013. Those attending this meeting agreed to the policy focus areas of NACI as outlined in the NACI Strategic Plan 2011/12–2014/15, which are: Monitoring, Coherence and Coordination of the National System of Innovation; Skills and Infrastructure for Research, Development and Innovation; Bioeconomy Policies and Strategies; Innovation for Economic Development and Social Upliftment and Gender Mainstreaming in Science, Technology and Innovation. As an outcome of the Ministerial Review Report, the Ministry expressed the intention to rationalise and or strengthen the policy advisory institutional framework within firstly the science system and then broadly within the national system of innovation. In order to achieve this, the Ministry began a high level process of consultation, with the result that the Executive Committee of NACI had to defer the implementation

of the latter corporate objectives, that is, (iii) and (iv) above. However, to this end, the Ministry has initiated a process of strengthening the Council with a mix of high level skills that will entrench NACI's role in the NSI. Furthermore, the recently published Science and Technology Laws Amendment Act, No.7 of 2014 (Government Gazette No. 37594), strengthens NACI's oversight responsibility through the nomination of a NACI Council representative on the Board of the National Research Foundation.

COMPOSITION OF NACI

NACI is a statutory advisory board established through the enactment of the National Advisory Council on Innovation Act, No. 55 of 1997. NACI is not a listed entity, but is governed by a Council which operates as a board of directors.

NACI Council

Council is constituted of 16 to 20 members appointed by the Minister for Science and Technology after consultation with the Ministers Committee and after submission to Cabinet for notification. The Council is broadly represented in all sectors, including government, and is composed of a spread of expertise and experience. The tenure of office bearers who are Council members is four years, with the possibility of extension for a period not exceeding two terms.

NACI ExCo

The Executive Committee of NACI comprises of five people including the chief executive officer (CEO) and the Chairperson of Council. The remaining three members are elected by Council from amongst its membership. ExCo carries out the following functions:

- deals with matters referred to it by Council
- deals with urgent matters
- deals with routine operational matters that do not require the seating of a full Council
- guides preparations for Council meetings
- ensures that the Council mandate is fulfilled.

Project Teams

Project Teams are constituted as panels of experts in terms of section 8(4)(a) of the Act, to assist Council in the execution of its functions. Project Team members are selected from academia, science councils, government, civil organisations and industry. These members direct and conduct pertinent research on topics agreed to with Council and related to the strategic priorities of NACI. Individual members serve for a short-term, project-linked period.

NACI Secretariat

The Secretariat is headed by a chief executive officer supported by a staff complement of 12 individuals who are all employees of the Department of Science and Technology. The Secretariat serves as an operational and management arm of Council on all matters pertaining to project management, research and policy advisory services. Although severely short staffed in light of the expanding role of NACI, the Secretariat is constituted of highly skilled employees who are policy specialists and analysts.

NACI ACTIVITIES, PERFORMANCE AND OUTPUTS

In the reporting period, seven specialised panels of experts directed research activities and policy analysis. Policy considerations flowing from the work of expert panels was given due consideration by ExCo and referred to Council for deliberation and approval.

MONITORING, COHERENCE AND COORDINATION OF THE NSI

This strategic objective encompasses the Policy Focus Areas (PFA) of Monitoring, Evaluation and Indicators and the Development of a National Innovation Framework.

PFA 1: Monitoring, Evaluation and Indicators

The monitoring, evaluation and indicators policy focus area is intended to provide policy input to enhance the functioning of the NSI. Through this focus area; NACI provides critical insights into the status of the NSI as well as its progress on coherence and coordination efforts. In the reporting period, the following projects were completed under this policy focus area:

i. **An Assessment of the Science, Technology and Innovation Indicator System:** The purpose of this study was to assess the status of South African STI data, to identify gaps in availability of data and to propose possible new indicators that could be used to address these gaps. The study resulted in a number of proposed new innovation indicators that NACI will conceptualise for further analysis in the 2014/15 financial year.

ii. **The South African Science and Technology Indicators Booklet, 2013:** This booklet is published annually by NACI and is aimed at assessing the overall performance of the South African NSI. NACI assessed trends in data over a ten year period (i.e. 2003–2012). As an improvement on previous versions, this year's booklet includes a brief analysis of the relevance of data for innovation policy processes.

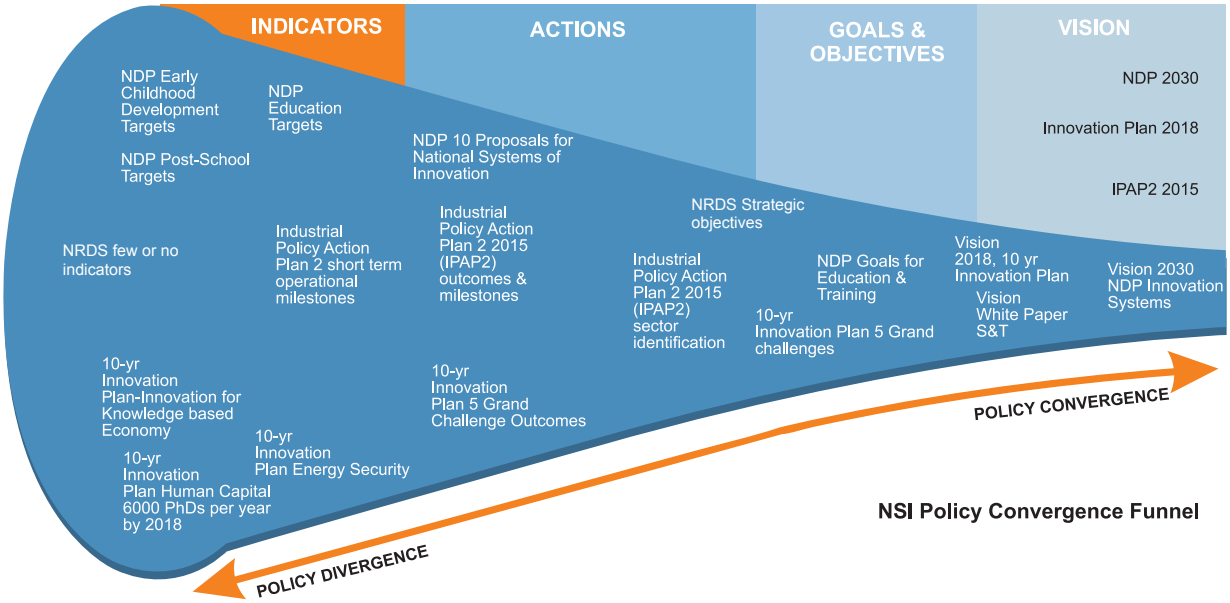
PFA 2: Development of a National Innovation Framework

To date, almost no prospective NSI planning of the kind envisaged in the White Paper on Science and Technology has been possible. NACI Council initiated this policy focus area to stimulate discussion on NSI building, with the possibility of proposing focus areas for a stronger innovation system. The objective of the National Innovation Framework policy focus area is to strengthen the NSI, guide policy coherence

and oversee inclusivity as the system strives to contribute to national goals. In the reporting period, NACI Council evaluated the current state of the NSI, identified gaps that could hinder the country's delivery on NDP targets and identified key strategic interventions to build on the current NSI. One critical gap identified on a policy level is a lack of policy coherence at the point of action plans and implementation.

Figure 2 below illustrates policy divergence in implementation, despite the unified vision. The proposed elements of a desired end state are discussed in detail above.

Figure 2: NSI Policy Funnel



Source: *NACI, 2013: Realising the Vision: Developing South Africa's National Innovation Framework*

The proposed National Innovation Framework, if adopted, will offer less complexity and more accountability, will be fully inclusive of all actors and sectors, and will encourage more cooperation (networks) and leverage innovation resources.

STRENGTHENING SKILLS AND INFRASTRUCTURE FOR RESEARCH DEVELOPMENT AND INNOVATION

Consistent with the key focus areas identified in the Innovation Framework, NACI evaluated research, innovation infrastructure, and skills necessary to accomplish the vision of a coordinated NSI capable of making a significant contribution to the national economy.

PFA 3: Infrastructure for Research Development and Innovation

The rationale for NACI's focus on innovation infrastructure was to assess the gap between the existing scientific and technological research and innovation infrastructure within the present NSI, and the ideal infrastructure in a future NSI.

During the reporting period, NACI concluded an assessment of research and the supporting innovation infrastructure in a report entitled "Research and Innovation Infrastructure in Support of South Africa's Innovation Framework, 2013". This report includes a preliminary assessment of research and innovation infrastructure in industry and public entities. It highlights the difference in strategic visions for research infrastructure as well as the misalignment between public and private sectors' use of national infrastructure to attract global players to the business of research in South Africa. The report also provides a comprehensive overview of developments that have taken place in research and innovation infrastructure since NACI's 2006 entitled "A Study on the Required Physical Infrastructure to Attain the Vision of the NSI".

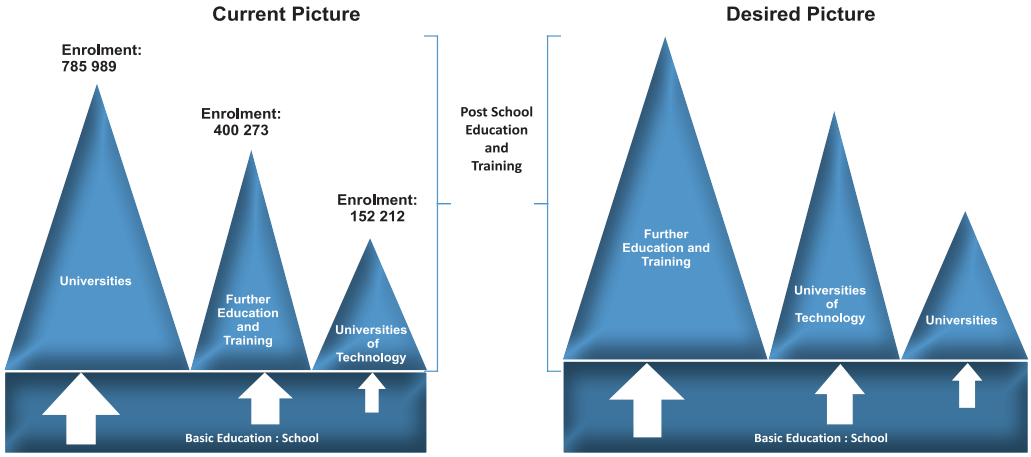
Findings from this work indicate that, as a member of the BRICS alliance, South Africa enjoys a high profile internationally in terms of its standing in the developing world. In this context, the integration and alignment of the South African Research and Innovation Infrastructure is of primary importance as a platform for the NSI if it is to become more attractive to foreign direct investors. The findings reveal, furthermore, that an integrated research and innovation platform could serve as a springboard for the South African Knowledge Economy to derive benefit from international research and development contracts, as has been demonstrated by the success of the SKA project. NACI also collaborated closely with the DST in the department's

work on the South African Research Infrastructure Roadmap (SARIR).

PFA 4: Strengthening Skills in Mathematics, Science and Technology

During this reporting period, NACI prepared a policy discussion document for the Minister for Science and Technology entitled "Strengthening Science, Technology and Innovation Skills: the case of vocational education". The discussion, which supports a refocused NSI, highlights the urgent need for the South African government to focus programmes on using education policy to achieve innovation policy outcomes of economic growth and competitiveness, as outlined in the NACI Act. NACI makes the assertion that the South African NSI has performed poorly in the area of entrepreneurship, in part as a result of weak links between education outcomes, sector skills and entrepreneurship. The discussion places even greater emphasis on mathematics and science education and focuses specifically on the technical and vocational education and training value-chains, based on the considerable influence these exert on technological advancement in sectors and on innovation intensity in the long run. Figure3 below shows that the enrolment picture is heavily inclined towards high-end academic skills, to the disadvantage of technical and vocational skills. NACI suggests that sector-based education policy can enforce the required changes in the structure of the economy. In the case of South Africa, this structure should be geared towards knowledge and innovation-intensity, employment generation and labour absorption in sectors, with education policy primarily supporting these goals.

Figure 3: Enrolment trends in post-school education and training



Source: *NACI, 2014: Strengthening Science, Technology and Innovation Skills: a case of vocational education*

In addition, outputs under this policy focus area are as follows:

- NACI input on the Human Capital Development Strategy for Research, Innovation and Scholarship. In this regard, Council held the view that the National Research and Development Strategy of 2002 provides adequately for government support in the research and development environment. Therefore, Council cautioned against yet another policy instrument.
- NACI input on the Monitoring Evaluation and Implementation Framework for DST and the NSI. NACI Council welcomed the DST's initiative of an M&E framework in light of the Department's mandate as the custodian of the NSI. Council's input stressed the need to strengthen the role of central policy making departments in the system, the need for innovation indicators for the NSI, and the necessity of placing greater emphasis on impact as opposed to input measurements alone.
- NACI Council responded to the Call for Public Inputs on the Promotion Requirements and Related Matters Impacting on the standard of the National Senior Certificate. In its submission to the Department of Basic Education, Council recommended an increase in the aggregate pass mark in schools to a minimum standard of 50%; and a revisit to the previous structure of standard and higher grade mathematics with a view to increasing the number of students studying pure mathematics.

BIOECONOMY POLICIES AND STRATEGIES

In January 2014, the DST launched the South African Bioeconomy Strategy. The aim of this is threefold:(i) to strengthen agricultural innovation in order to enhance nutrition and ensure food security and health improvement; (ii) to strengthen South Africa's capability in the development of active pharmaceutical ingredients, vaccines and bio-pharmaceuticals, African traditional medicines, diagnostics and medical devices; and (iii) to create bio-based commercial industrial goods.

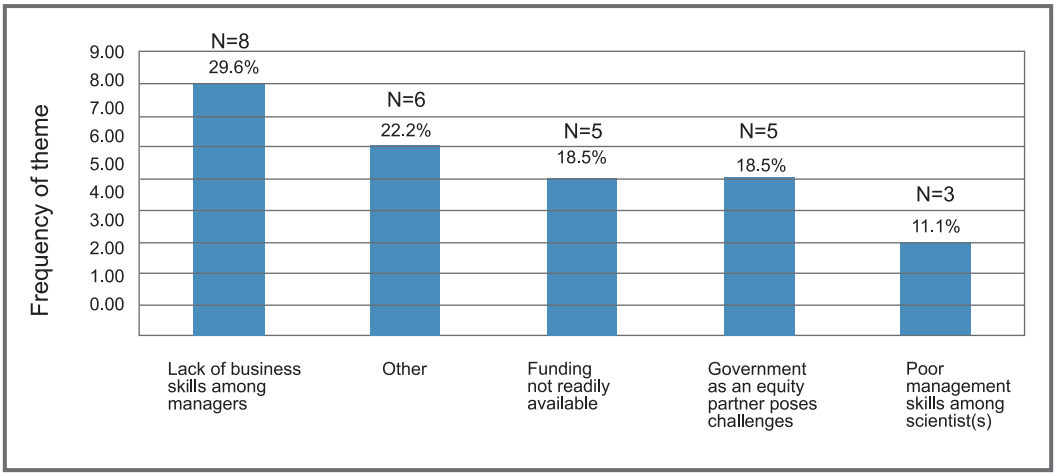
PFA 5: Bioeconomy

Although a continuation of the work of the former National

Biotechnology Advisory Committee (NBAC), the bioeconomy policies and strategies policy focus area, has a somewhat expanded focus that aims to support the implementation of the South African Bioeconomy Strategy. In this policy thrust, NACI gathers intelligence on the progress made by the country in the bioeconomy sector. In the reporting period, NACI hosted a workshop entitled "Translational Research: From Laboratory to Industry". The aim of the workshop was to address the opportunities and problems associated with moving research from the laboratory to industry. The workshop featured a keynote address by an international speaker, Dr Gabriela Cezar from Brazil, who stressed the importance of a vigorous venture capital environment to the success of a bioeconomy strategy. There were also presentations by various national experts. The workshop was instrumental in educating, creating awareness, generating discussions, and sourcing new opportunities for commercialisation of research in South Africa.

The South African government has identified biotechnology as a priority and over the years has implemented several approaches to fund biotechnology research in support of growth in this sector. Specifically, the South African government has supported the commercialisation of technology through equity and grant funding through the Biotechnology Regional Innovation Centres (BRICs) as well as the Innovation Fund, and subsequently through the Technology Innovation Agency (TIA). The BRICs and Innovation Fund have sponsored and supported many biotechnology-based SMEs during their lifetime. As several of the funded start-up entities were not successful, NACI commissioned a study entitled "An investigation into the reasons why certain biotechnology enterprises have failed in South Africa". This study highlights the causes for the failure of the start-ups and makes recommendations for mitigating these factors. The findings of the study are summarised diagrammatically in Figure 4 below:

Figure 4: Causes for the Failure of Biotechnology Start-Ups



Source: *NACI, 2013: An investigation into the reasons why certain biotechnology enterprises fail in South Africa*

- 30% of the failed entities identified insufficient business skills among managers as the root cause of failure.
- 19% highlighted government/shareholder challenges.
- 19% attributed failure to funding being inadequate/not being readily available.
- 11% indicated poor management skills among the scientist(s)/entrepreneur(s).
- 22% was allocated to the "other" category.

In the reporting period, government launched a new Bioeconomy Strategy. It is NACI's considered opinion that the main difficulty in the implementation of this Strategy lies in ensuring that the country uses its strengths in biotechnology to meet national needs and to position South Africa globally. If this is to be successful, buy-in and active support for the Strategy will have to be obtained from other government departments involved, such as Agriculture, Forestry and Fisheries, Health, Environmental Affairs, Trade and Industry and Higher Education.

Through its expert panel on the bioeconomy, NACI prepared a policy document highlighting policies and pieces of legislation that may affect – in many cases adversely –, the implementation of the South African Bioeconomy Strategy. The document explains how the following legislation affects the implementation of the strategy, and aims to highlight specific clauses that would require consideration in any future revision of acts:

- The Intellectual Property Rights from Publicly Financed Research and Development Act, 2008 (Act no. 52 of 2008)
- The Skills Development Act, 1998 (Act no. 97 of 1998)
- The Higher Education and Training Amendment Act, 2012 (Act no. 23 of 2012)
- The Biodiversity Act, 2004 (Act no. 10 of 2004)
- The Medicines and Related Substances Act, 1997 (Act no. 90 of 1997)
- The National Health Act, 2004 (Act no. 61 of 2004)

- The Genetically Modified Organisms Act, 1997 (Act no. 15 of 1997)
- The Consumer Protection Act, 2008 (Act no.68 of 2008)

There is little doubt that biotechnology can play a major role in developing innovative products and services, creating jobs and improving the skills base of the country. In order to maximise the impact of government investment in biotechnology, an enabling rather than a restrictive legislative environment is required. Successful implementation of the Bioeconomy Strategy will require careful consideration of the existing legal environment across several key departments.

INNOVATION FOR ECONOMIC DEVELOPMENT AND SOCIAL UPLIFTMENT

The NSI is expected to support the objectives of the NDP. As indicated in the policy focus areas above, it is clear that the NSI has to some extent been effective. However, in accordance with various reviews of the system, including the Ministerial Review on Science, Technology and Innovation, there are critical gaps which include a lack of programmes dedicated to supporting growth of small, micro and medium enterprises (SMMEs). In this policy thrust, NACI seeks to support the role that small businesses can play in bringing about innovation intensity and, thereby, competitiveness.

PFA 6: Innovation for Economic Development and Social Upliftment

The Innovation for Economic Development and Social Upliftment policy thrust focuses on gathering intelligence on all forms of tested flagship innovation models and small, micro and medium enterprises (SMMEs) that have had a demonstrable positive impact on the economy and quality of life. This thrust supports an enabling policy environment for rolling out existing innovation solutions to in turn support the growth of the SME sector. In this light, NACI conducted and completed the following project activities during the reporting period:

I. Position paper covering strategies and methodologies for rolling out forms of proven innovative solutions (flagship innovation projects) for increased socio-economic impact
II. A study report covering the assessment of gaps and challenges in policy instruments that support growth of innovation-based SMEs in South Africa

NACI's work in this area reveals the existence of many proven innovative solutions that have great potential to respond to social challenges such as municipal service delivery. The weaknesses in the NSI include inadequate support for identifying and taking innovation solutions to scale. Furthermore, studies confirm the potential value of SMEs in advancing entrepreneurship and creating job opportunities, thereby making an impact on the overall quality of life and wealth creation. NACI posits that start-ups are poorly supported by existing (financial and non-financial) instruments; as a result, many die within the first three years of existence.

NACI has recommended some interventions geared to addressing specific challenges such as funding, coordination, awareness and profiling, entrepreneurial and management skills and an enabling environment in terms of regulatory and compliance policy, dedicated funding for start-ups (venture capital and angel funds) etc. Furthermore, this work also supports NACI's stance on a refocused NSI.

GENDER MAINSTREAMING IN SCIENCE, TECHNOLOGY AND INNOVATION

Gender mainstreaming stresses the shared responsibility of both men and women in removing imbalances in society. NACI defines gender mainstreaming as a strategy to integrate gender imbalance concerns in the planning and implementation of policy, legislation, monitoring and assessment of a system such as the science, technology and innovation (STI) system (NACI, 2014).

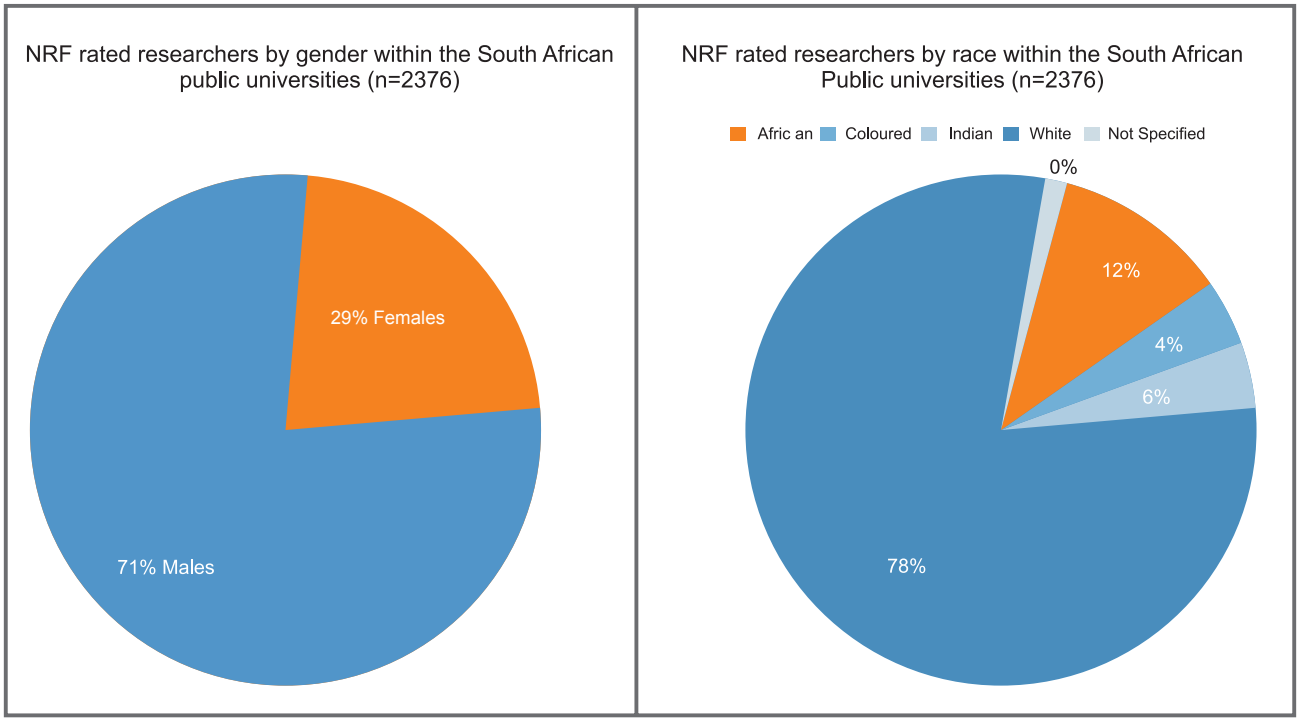
The promotion of gender equality in the STI is an important dimension of the building of a human capital base for science, technology and innovation. If the science system were to succeed in this objective, through producing a significant increase in the number of women as SET graduates, researchers, academic staff, beneficiaries of funding in the system and members of science boards, NACI believes that the economic spill-over would be equally significant. Hence, the Council has focused consistently on gender mainstreaming as one of the ultimate objectives that should not be lost sight of by either the national system of innovation or the science system.

PFA 7: Gender Mainstreaming

During the reporting period Council developed a policy discussion document entitled "Benchmarking the Policy Environment for Gender Mainstreaming in the STI – mitigating gender disparities". The policy discussion compares South Africa's academic and research environment to those of India and Brazil. The comparability of these countries (India, Brazil and South Africa – IBSA) stems from their similar positions as developing and emerging economies, experiencing similar challenges and motivated in light of their economic engagements to follow desirable and mutually beneficial strategies.

Amongst other issues, Council found that the methodological approach of target setting and incentive driven programmes is common to all countries, with similar degrees of success, depending on the responsiveness of environments within which programmes are implemented. The STI workplace has proved to be responsive to access by both genders, but rigid to *upward mobility and leadership* positions. In the case of

Figure 5: Rated Researchers by Gender and Race in South Africa's Public Universities



Source: *NACI, 2014: NACI views on the NRF rating system*

the South African STI environment, a clear disjunction can be observed between incentive programmes, constant monitoring and evaluation and the resultant impact. Figure 5 below shows the extent of gender and racial transformation in South Africa's research workplace.

Council finalised a document entitled "NACI views on the NRF rating system". In this document and based on data obtained from the National Research Foundation (NRF) and from the Department of Higher Education and Training's HEMIS database, Council mapped out the representation of men and women in the science, technology and innovation (STI) academic research landscape. The picture that emerged shows gross under-representation of women at the highest levels of the academic hierarchy as well as in the scientific research landscape. NACI Council has since recommended that the NRF undertake an impact assessment study in an effort to understand how women academics and scientists relate to the rating instrument. Council has further suggested that the sample should include academics who applied for and obtained a good rating as well as academics who could apply but did not, in order to understand their reluctance.

Under this focus area the following additional outputs were further delivered:

- An E-Learning Platform to assist the NACI Secretariat in mainstreaminging gender and disability issues in all focus areas of Council
- A Booklet entitled "Understanding Mainstreaming – a practical guide toward mainstreaming gender and disability"

INTERNATIONAL LIAISON

Table 1: Participation in International Platforms

EVENT	LOCATION	ATTENDEE	DATE
The Quality of Science for Policy and Consequences for the Role and Responsibility of Scientists	Berlin, Germany (OECD)	Dr N. Moleleki	27–28 February 2014
The 22nd session of the Task Force on Industrial Biotechnology (TFIB) and the 32nd session of the Working Party on Biotechnology (WPB)	Paris, France (OECD)	Dr N. Moleleki	10–12 June 2013
The 23rd session of the Task Force on Industrial Biotechnology (TFIB) and the 33rd session of the Working Party on Biotechnology (WPB)	Paris, France (OECD)	Dr N. Moleleki	4–6 November 2013
OECD Working Party of National Experts on Science and Technology Indicators meeting	Paris, France (OECD)	Mr P. Letaba	17–19 April 2013
Biennial Atlanta Conference on Science and Innovation Policy	Atlanta, Georgia, USA	Dr T. Netshiluvhi	26–28 September 2013

LOCAL (EVENTS) STRATEGIC ENGAGEMENTS

Table 2: Participation in Local Events and Strategic Engagements

EVENT	LOCATION	ATTENDEE	DATE
NACI Session of Wise on Strengthening Skills in Mathematics, Science and Technology	Pretoria, Premier Hotel	Hosted by NACI	24 April 2013
The 3rd HESA Biennial Research and Innovation Conference: Higher Education engaging with the National Development Plan (NDP): Exploring the possibilities and limits in Research & Innovation	Pretoria	Dr N. Moleleki Mr N. Tsatsi	3–4 April 2013
CREST Seminar on “Where are Innovation Indicators and Measurement going in the Next Five Years?”	Stellenbosch University	Mr P. Letaba and Ms R. Maila	21 August 2013
Policy Seminar on the Future of Innovation Measurements	Department of Science and Technology	Science, technology and innovation indicators’ stakeholders	20 November 2013

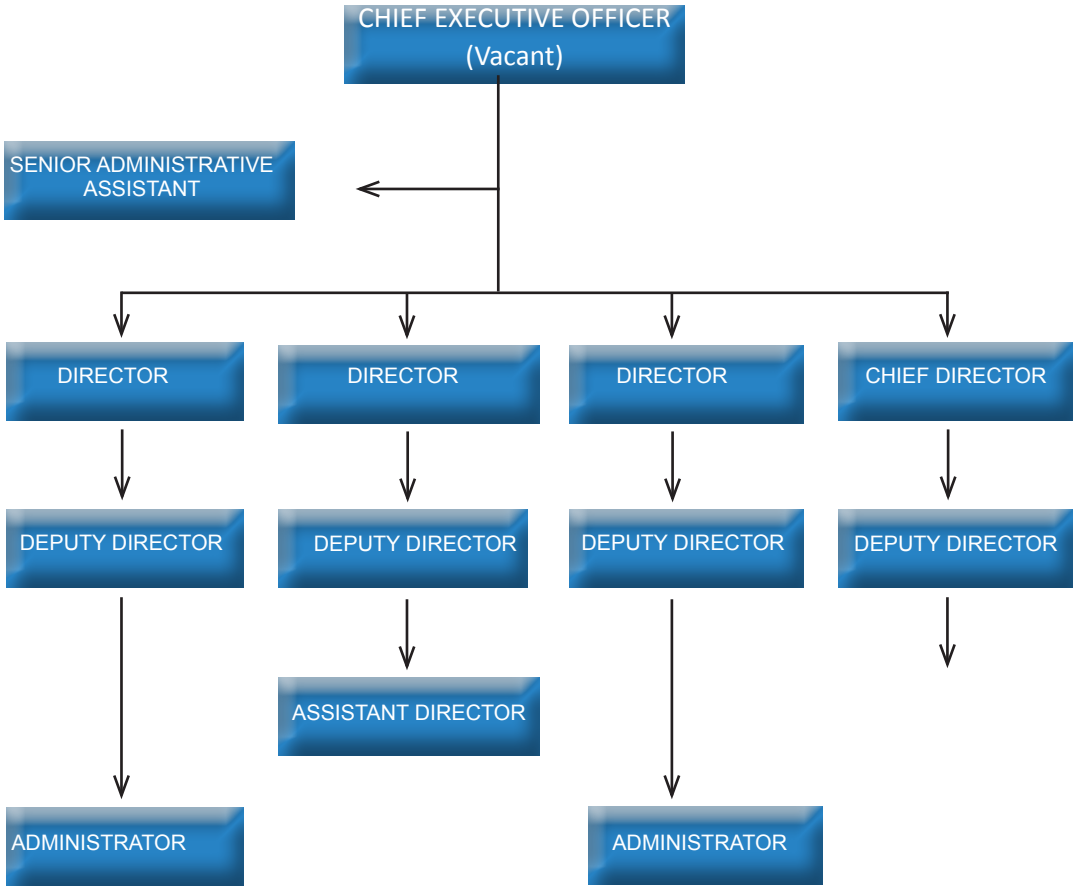
HUMAN RESOURCES

In the reporting period, the NACI Secretariat comprised a staff complement of 12 individuals excluding the position of a CEO, currently held in an acting capacity. The staff of the NACI Secretariat includes: x1 Chief Director, x3 Directors, x4 Deputy Directors, x1 Assistant Director, x2 Administrators and x1 Senior Administrative Assistant.

Staff members in the Secretariat are appointed on a full-time basis in terms of the Public Service Act.

After the adoption by Council of an expanded work programme in 2012 through the NACI Strategic Plan and its ratification by the Minister(s) for Science and Technology, the Secretariat became severely under-resourced in terms of the number of active individuals available to respond to the expanded focus.

Figure 6: The Operational Organogram of the NACI Secretariat



FINANCIAL RESOURCES

As an unlisted entity, NACI does not receive its own budget allocation from National Treasury. The functions of Council are fulfilled through the operational budget of Programme 1 (Administration) in the Department of Science and Technology. Therefore, although NACI has a CEO, who is an Accounting Officer in terms of the Public Finance Management Act (PFMA), NACI does not have its own corporate services function, relying instead on the Department's support for that function. The NACI allocated budget for 2013/14 was R12 503 000.00, of which NACI expended R 11 760 656.31. Accumulated savings occurred as a result of the vacancy of the position of CEO. See Table 3 below:

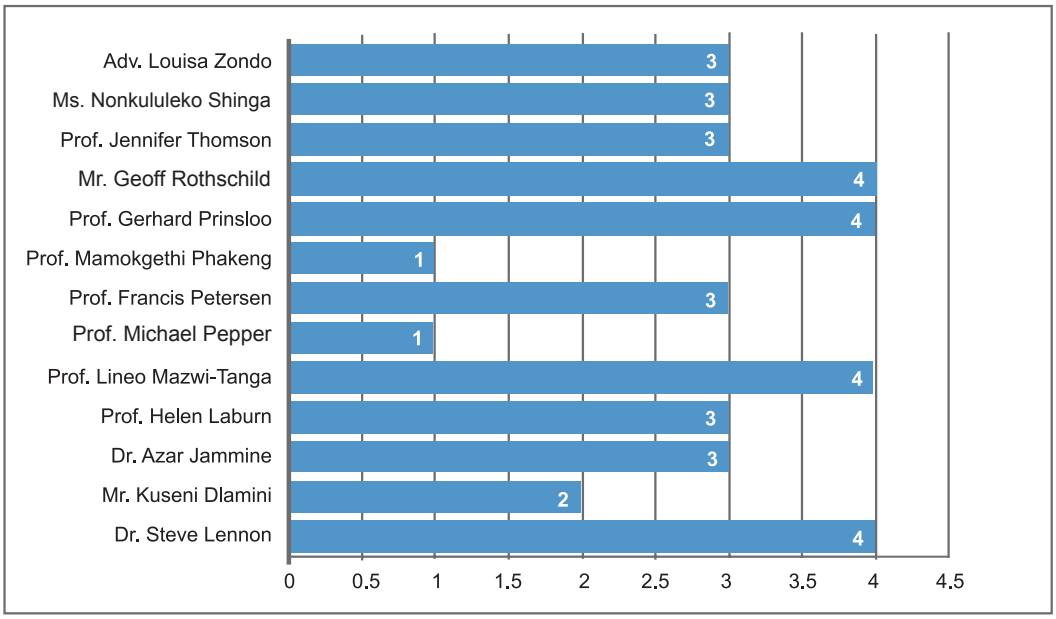
Table 3: Allocated Funds 31 March 2014

NACI ALLOCATED BUDGET AND EXPENDITURE BREAKDOWN AS OF 30 MARCH 2014				
DESCRIPTION	Expenditure	Committments	Budget	Available Budget
COMPENSATION OF EMPLOYEES	R 6,826,391.02	R 0.00	R 6,849 000.00	R 890,608.98
GOODS AND SERVICES	R 4,923,439.29	R 22,943.91	R 5,643 000.00	R 160,383.20
TRANSFERS AND SUBSIDIES	R 10,826.00	R 0.00	R 11, 000.00	R 10,826.00
TOTAL	**R 11,760,656.31**	**R 22,943.91**	**R 12,503,000.00**	**R 719,399.78**

GOVERNANCE REPORT:

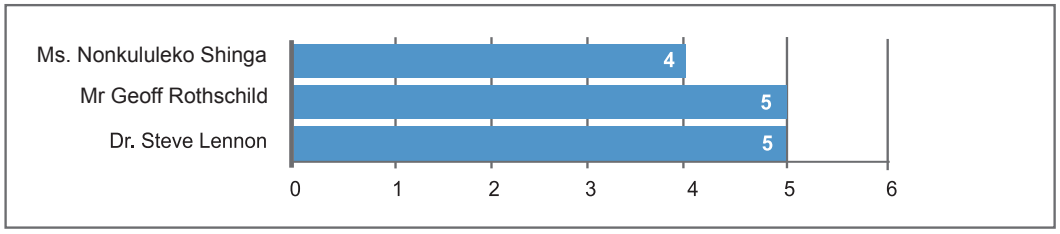
The Governance report reflects interactions between Council, ExCo, Experts and the NACI Secretariat. Interaction takes the form of boardroom meetings, workshops, one-on-one meetings on specific project issues, teleconferences etc.

Council Meetings in 2013/14

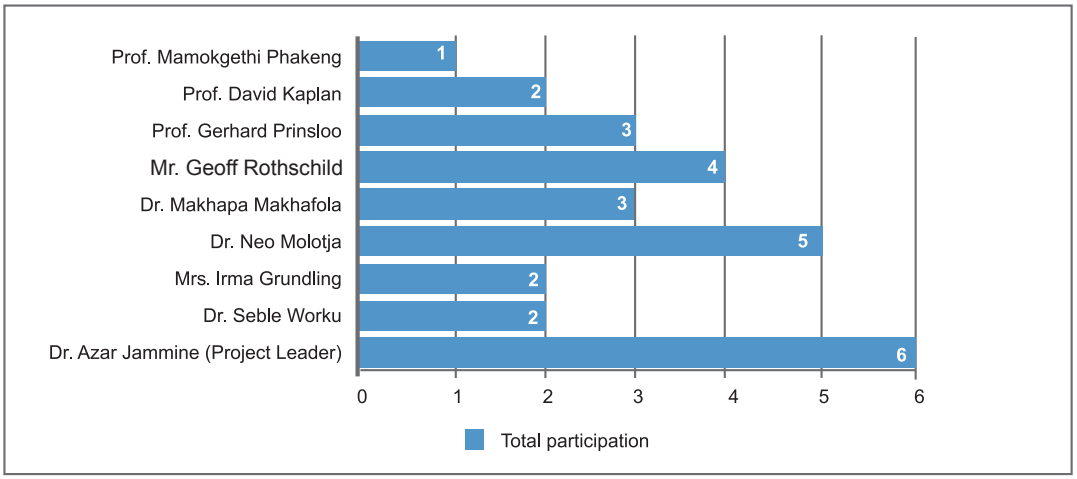


Executive Committee Meetings in 2013/14

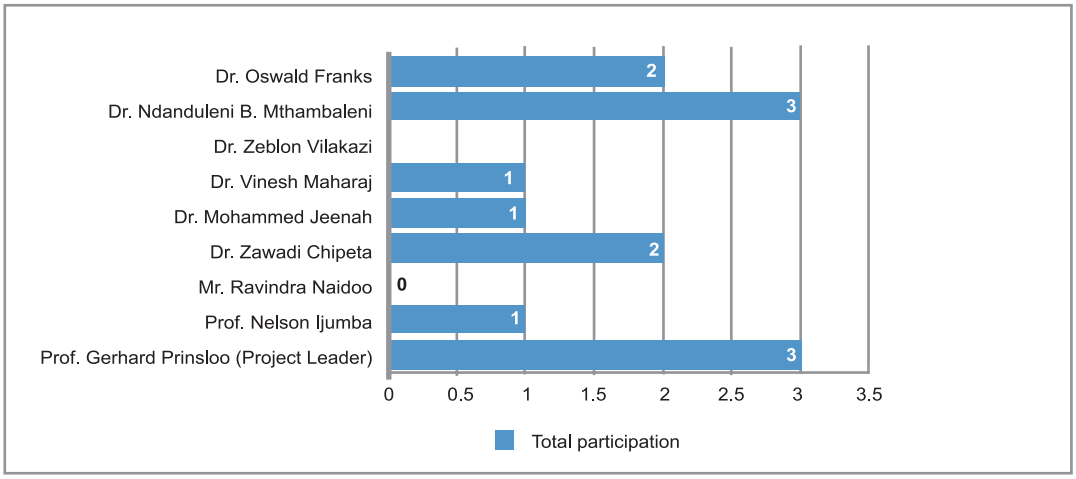
(There are only three members of Council who are also members of the Executive Committee.)



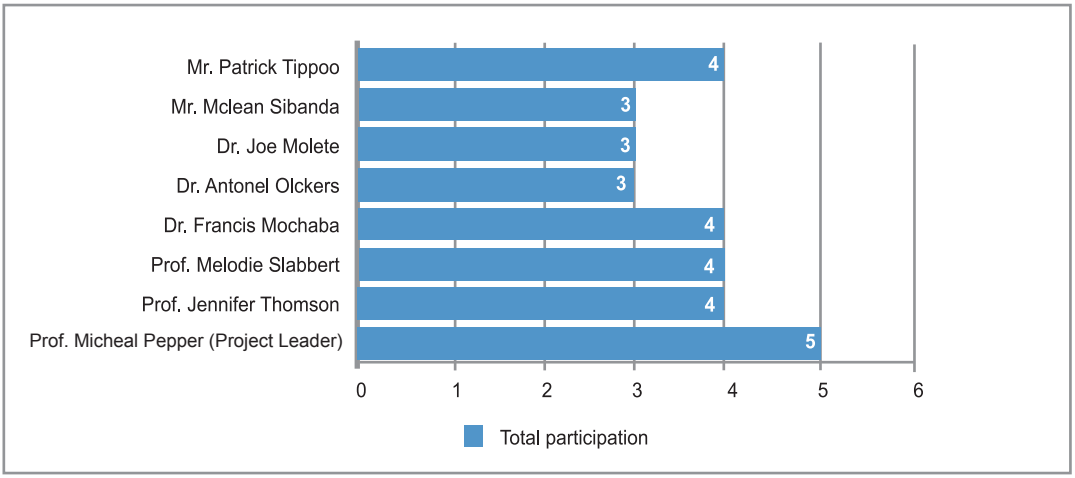
Monitoring, Evaluation and Indicators Meetings in 2013/14



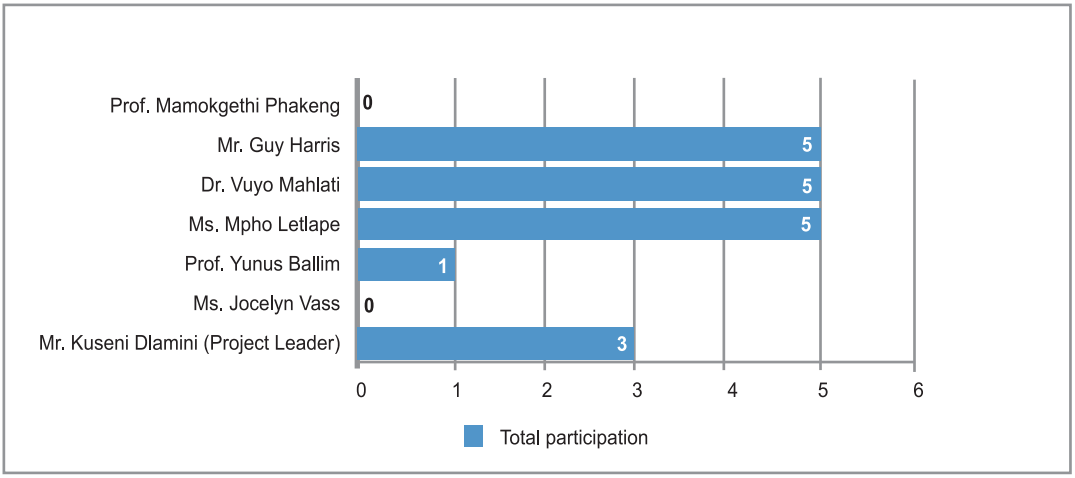
Infrastructure for Research Development and Innovation Meetings in 2013/14



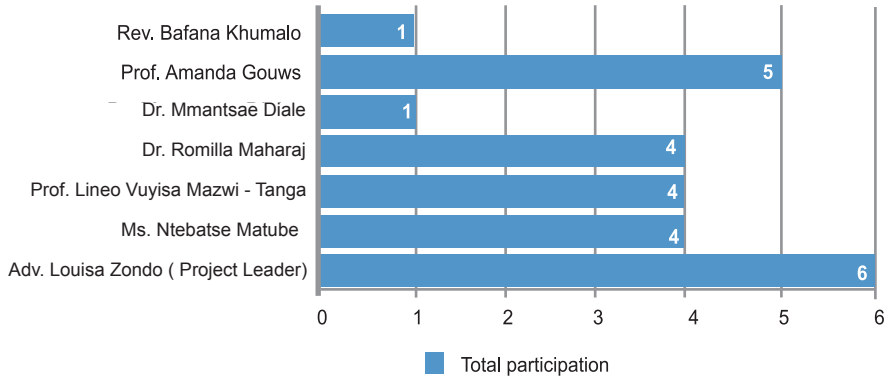
Bioeconomy Meetings in 2013/14



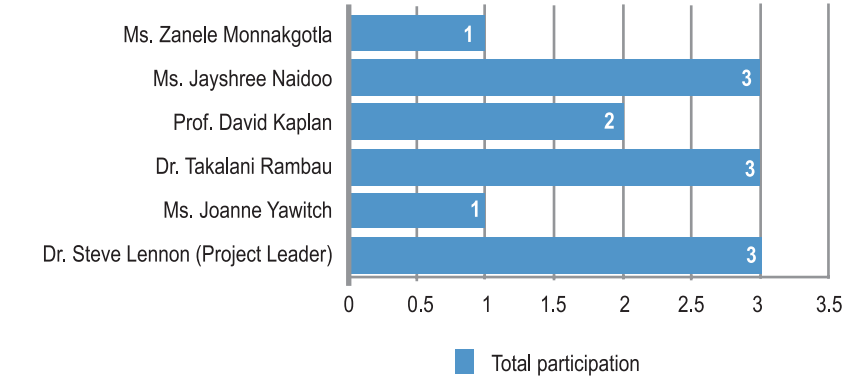
Strengthening Skills in Mathematics, Science and Technology Meetings in 2013/14



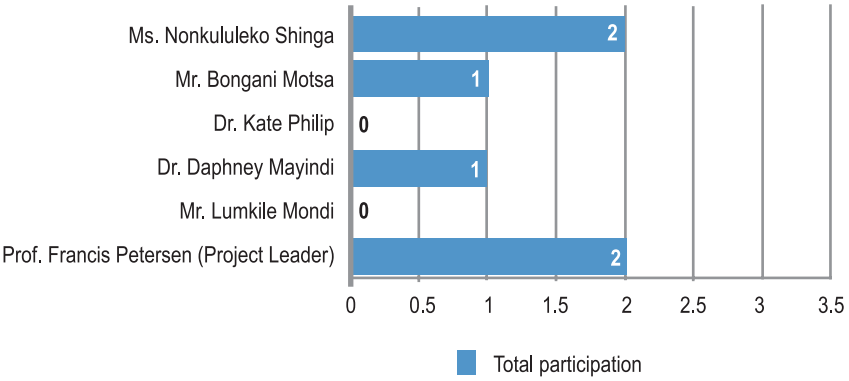
Gender Mainstreaming Meetings in 2013/14



Development of a National Innovation Framework Meetings in 2013/14



Innovation for Economic Development and Social Upliftment Meetings in 2013/14



GOVERNANCE OF INFORMATION AND TECHNOLOGY:

NACI records are created, managed and will be disposed of in terms of the National Archives and Records Service of South Africa Act, of 1996, and its accompanying regulations, and the Records Management Policy Manual. NACI files its documents in compliance with the DST's file plan. The NACI Secretariat also has access to information management tools, such as Alfresco (a DST document management system), which are at the disposal of the Department.

SUSTAINABILITY:

Reviews of the national system of innovation have indicated the need to strengthen NACI as a national instrument driving innovation policy advice in South Africa. Review reports have suggested that NACI requires a stronger legislative framework to enable it to perform effective oversight over the NSI. Indeed, both the former and the current Ministers for Science and Technology have implemented specific legislative provisions in the Science and Technology Laws Amendment Act. In order to sustain its role in the NSI, the NACI Act may need to be revised. An arms-length relationship with a single national department is required to empower the entity's work on innovation policy, allowing it to permeate all central policy making departments as was envisaged in the White Paper on Science and Technology. A legislative framework that allows the entity to be more accountable to parliament is preferable, even as it reports through a single Executive Authority.

NACI concluded a cooperation agreement with the Academy of Sciences South Africa to strengthen evidence-based reviews on key issues in the system. It is Council's intention to expand such collaborative efforts to other research institutes in the system.

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 objects have been achieved, to the Minister for 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 Laws with which it has to comply.

NACI: PLANNING FOR THE FUTURE

The Medium Term Strategic Framework 2009–2014, the New Growth Path, the National Development Plan and other policy documents remain the basis for NACI's strategic direction. The NACI Strategic Plan 2015–2020 is being developed in the belief that NACI, as an important primary advisory body on innovation in the country, will continue to drive policy thinking in this space. NACI's influence on policy in the next five years will focus on the following issues:

- Monitoring, Evaluation and Coherence in the NSI
- The Bioeconomy and Energy Security
- Government Investment in Infrastructure
- The Green Economy and Climate Change
- Growth Sectors and SME development
- Skills, Mainstreaming and Delivery of Essential Services

NACI will continue to provide expertise from its experience and the collective insights of its diverse membership. Internally, NACI has built high level analytical skills for optimal policy support. As the term of the current Council draws to an end, it remains committed to provide induction support to the incoming team that will finalise the NACI Strategy (2015/16–2019/20) and take forward the priorities outlined above.

APPENDICES

APPENDIX A: MEMBERS OF THE NACI COUNCIL 2013/14

FULL NAME	ORGANISATION
Dr Steve Lennon (Chairperson)	ESKOM Holdings SOC
Mr Kuseni Dlamini	Times Media
Dr Azar Jammine	Econometrix LTD
Prof. Helen Laburn	University of the Witwatersrand
Prof. Lineo Vuyisa Mazwi-Tanga	Cape Peninsula University of Technology
Prof. Michael Pepper	University of Pretoria
Prof. Francis W. Peterson	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 B. Zondo	SASOL
Mr Thulani Mavuso	Acting CEO: NACI

APPENDIX B: MEMBERS OF THE NACI EXECUTIVE COMMITTEE 2013/14

FULL NAME	ORGANISATION
Dr Steve Lennon	ESKOM Holdings SOC
Mr Geoff Rothschild	Johannesburg Stock Exchange
Ms Nonkululeko Shinga	Department of Trade and Industry
Mr Thulani Mavuso	Acting CEO: NACI

APPENDIX C: NACI PANELS OF EXPERTS 2013/14

MEMBERS OF THE MONITORING EVALUATION AND INDICATORS PROJECT TEAM

FULL NAME	ORGANISATION
Dr Azar Jammine (Project Leader)	Econometrix LTD
Dr Seble Worku	Statistics South Africa
Mrs Irma Grundling	Yakini Consulting
Dr Neo Molotja	Human Sciences Research Council
Dr Makhapa Makhafola	Mintek
Mr Geoff Rothschild	Johannesburg Stock Exchange
Prof. Gerhard Prinsloo	Durban University of Technology
Prof. David Kaplan	University of Cape Town
Prof. Mamokgethi Phakeng	University of South Africa

MEMBER OF THE DEVELOPMENT OF A NATIONAL INNOVATION FRAMEWORK PROJECT TEAM

FULL NAME	ORGANISATION
Dr Steve Lennon (Project Leader)	ESKOM Holdings SOC
Ms Joanne Yawitch	National Business Initiative
Dr Takalani Rambau	Academy of Sciences South Africa
Prof. David Kaplan	University of Cape Town
Ms Jayshree Naidoo	Da Vinci Institute
Ms Zanele Monnakgotla	Industrial Development Corporation

MEMBERS OF THE INFRASTRUCTURE FOR RESEARCH DEVELOPMENT AND INNOVATION PROJECT TEAM

FULL NAME	ORGANISATION
Prof. Gerhard Prinsloo(Project Team Leader)	Durban University of Technology
Prof. Nelson Ijumba	University of KwaZulu-Natal
Mr Ravindra Naidoo	Infrastructure & Development Advisory Practice
Dr Zawadi Chipeta	Centre for Disease Control & Prevention
Dr Mohammed Jeenah	Agricultural Research Council
Dr Vinesh Maharaj	Council for Scientific & Industrial Research
Dr Zeblon Vilakazi	iThemba Labs
Dr Ndanduleni B. Nthambeleni	National Research Foundation
Dr Oswald Franks	Engineering Council of South Africa

MEMBERS OF THE STRENGTHENING SKILLS IN MATHEMATICS, SCIENCE AND TECHNOLOGY PROJECT TEAM

FULL NAME	ORGANISATION
Mr Kuseni Dlamini (Project Leader)	Times Media
Ms Jocelyn Vass	Department of Trade and Industry
Prof. Yunus Ballim	University of the Witwatersrand
Ms Mpho Letlape	SASOL Inzalo Foundation
Dr Vuyo Mahlati	International Women's Forum South Africa
Mr Guy Harris	Management Consultant
Prof. Mamokgethi Phakeng	University of South Africa

MEMBERS OF THE BIOECONOMY PROJECT TEAM

FULL NAME	ORGANISATION
Prof. Michael Pepper (Project Leader)	University of Pretoria
Prof. Jennifer Thomson	University of Cape Town
Prof. Melodie Slabbert	University of South Africa
Dr Francis Mochaba	Bioclones
Dr Antonel Olckers	DNAbiotec Pty Ltd
Dr Joe Molete	Council for Scientific and Industrial Research
Mr McLean Sibanda	The Innovation Hub
Mr Patrick Tippoo	The Biovac Institute

MEMBERS OF THE INNOVATION FOR ECONOMIC DEVELOPMENT AND SOCIAL UPLIFTMENT PROJECT TEAM

FULL NAME	ORGANISATION
Prof. Francis Petersen (Project Leader)	University of Cape Town
Mr Lumkile Mondi	Industrial Development Corporation
Dr Daphney Mayindi	Department of Rural Development and Land Reform
Dr Kate Philip	Trade and Industrial Policy Strategies
Mr Bongani Motsa	Department of Energy
Ms Nonkululeko Shinga	Department of Trade and Industry

MEMBERS OF THE GENDER MAINSTREAMING PROJECT TEAM

FULL NAME	ORGANISATION
Adv. Louisa Zondo (Project Leader)	SASOL
Ms Ntebatse Matube	Women in Nuclear SA
Prof. Lineo Vuyisa Mazwi-Tanga	Cape Peninsula University of Technology
Dr Romilla Maharaj	National Research Foundation
Dr Mmantsae Diale	University of Pretoria
Prof. Amanda Gouws	Commission for Gender Equality
Rev. Bafana Khumalo	Sonke Gender Justice Network

APPENDIX D: COMPLETED RESEARCH, DESKTOP STUDIES AND POSITION PAPERS IN 2013/14

No.	Completed Research and Reports 2013/14
1.	South African Science and Technology Indicators Booklet, 2013
2.	Summary Report: Proposed National Innovation Framework Positioned to Support the Targets of the NDP, 2013
3.	Report on An Assessment of Gaps in Policy Instruments that Support Growth of Innovation-Based SMMEs in South Africa, 2013
4.	Policy Discussion Document on Benchmarking the Policy Environment for Gender Mainstreaming in the STI: Mitigating Gender Disparities, 2013
5.	Report on Realising the Vision of the NDP: Developing South Africa's Innovation Framework, 2013
6.	Report on Research and Innovation Infrastructure in Support of the Innovation Framework for South Africa, 2013
7.	Policy Discussion Document on Strengthening Science, Technology and Innovation Skills: a case of vocational education, 2013
8.	Understanding Mainstreaming: a Practical Guide Toward Mainstreaming Gender and Disability in the STI, 2014
9.	Proceedings Report: Translational Research: From Laboratory to Industry
10.	An Investigation into the Reasons why certain Biotechnology Enterprises have failed in South Africa
11.	Report on Legislations and Policies that affect the Implementation of the Bioeconomy Strategy

APPENDIX E: POLICY ADVICE COMPLETED IN 2013/14

No.	Submitted Policy Advice Topics 2013/14
1.	Policy Advice on "A Refocused NSI" and better alignment with the NDP
2.	Policy Advice on Gender Mainstreaming in the STI
3.	Policy Advice on Strengthening Skills in Mathematics, Science and Technology
4.	Policy Advice on Support for Up-scaling Innovative Solutions and for growth of SMMEs
5.	Policy Advice on Infrastructure for Research and Innovation
6.	Policy Advice on An Assessment of the National Innovation System (STI Indicators)
7.	Policy Advice on The Reasons Why Certain Biotechnology Enterprises Have Failed in South Africa
8.	Policy Advice on Legislations and Policies That Affect The Implementation Of The Bioeconomy Strategy

APPENDIX F: WORKSHOPS & SEMINARS IN 2013/14

WORKSHOPS AND SEMINARS	DATE
Strengthening Skills in Mathematics, Science and Technology	24 April 2013
Design-Thinking Workshop on the Role of the NSI in supporting objectives of the NDP	18 May 2013
Gender Mainstreaming Workshop: Infusing Gender and Disability in the focus areas of NACI	24–25 July 2013
The Future of Innovation Measurement	20 November 2013

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