



INNOVATION FOR A BETTER FUTURE

annual report 2012 | 2013



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

NACi
NATIONAL ADVISORY COUNCIL ON INNOVATION



Minister for Science and Technology

Council

Executive Committee

NACI Secretariat

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



Dr Steve Lennon
Eskom Holdings SOC



Mr Kuseni Dlamini
New Bond Capital LTD



Prof Helen Laburn
University of the Witwatersrand

THE NACI COUNCIL



Prof Lineo Mazwi-Tanga
Cape Peninsula University
of Technology



Dr Azar Jamine
Econometrix LTD



Prof Gerhardus Prinsloo
Durban University
of Technology



Prof Jennifer A Thomson
University of Cape Town



Prof Francis W Petersen
University of Cape Town



Mr Geoff Rothschild
Johannesburg
Stock Exchange



Adv. Louisa Zondo
SASOL



Prof Michael S Pepper
University of Pretoria



Ms Nkuli Shinga
Department of Trade
and Industry



Prof Mamokgethi Phakeng
University of South Africa

TABLE OF CONTENTS

GOVERNANCE STRUCTURE	3
MESSAGE FROM THE MINISTER FOR SCIENCE AND TECHNOLOGY, THE HONOURABLE DEREK HANEKOM	8
CHAIRMAN'S OVERVIEW, DR STEVE LENNON	10
INTERNATIONAL BENCHMARKING OF THE SOUTH AFRICAN NATIONAL SYSTEM OF INNOVATION	12
Introduction	12
Global Innovation Index	12
Knowledge Economy Index	13
Global Competitiveness Index	13
Discussion	14
Conclusion	16
CORPORATE OVERVIEW	17
NACI Mandate	17
Mission Statement	17
Vision	17
Values	17
Corporate Objectives	18
COMPOSITION OF NACI	18
NACI Council	18
NACI ExCo	18
Project Teams	18
NACI Secretariat	18
NACI ACTIVITIES, PERFORMANCE AND OUTPUTS	19
MONITORING, COHERENCE AND COORDINATION OF THE NSI	19
Policy thrust 1: Monitoring, Evaluation and Indicators	19
Policy thrust 2: Development of a National Innovation Framework	20
STRENGTHENING SKILLS AND INFRASTRUCTURE FOR RESEARCH DEVELOPMENT AND INNOVATION	20
Policy thrust 3: Infrastructure for Research and Innovation	20
Policy thrust 4: Strengthening Skills for Mathematics, Science and Technology	20
BIOECONOMY POLICIES AND STRATEGIES	21
Policy thrust 5: Bioeconomy Policies and Strategies	21
INNOVATION FOR ECONOMIC DEVELOPMENT AND SOCIAL UPLIFTMENT	21
Policy thrust 6: Innovation for Economic Development and Social Upliftment	21

GENDER MAINSTREAMING IN SCIENCE, TECHNOLOGY AND INNOVATION	22
Policy thrust 7: Gender Mainstreaming	22
INTERNATIONAL LIAISON	22
LOCAL (EVENTS) STRATEGIC ENGAGEMENTS	23
HUMAN RESOURCES	24
FINANCIAL RESOURCES	25
GOVERNANCE REPORT	26
MEETINGS	26
GOVERNANCE OF INFORMATION TECHNOLOGY	30
SUSTAINABILITY	30
COMPLIANCE WITH LEGISLATION	30
APPENDICES	31
APPENDIX A: COMPLETED RESEARCH, DESKTOP STUDIES & POSITION PAPERS IN 2012/13	31
POLICY ADVICE COMPLETED IN 2012/13	31
PROCEEDINGS REPORTS FROM WORKSHOPS & SEMINARS IN 2012/13	31
APPENDIX B: MEMBERS OF NACI COUNCIL 2012/13	32
APPENDIX C: MEMBERS OF THE EXECUTIVE COMMITTEE 2012/13	32
APPENDIX D: NACI COMMITTEES FROM 2009 UNTIL AUGUST 2012/13	33
MEMBERS OF THE SET FOR WOMEN COMMITTEE	33
MEMBERS OF THE NATIONAL BIOTECHNOLOGY ADVISORY COUNCIL	33
MEMBERS OF THE NACI SKILLS TASK TEAM	34
MEMBERS OF THE INNOVATION FOR DEVELOPMENT COMMITTEE	34
MEMBERS OF THE INDICATORS REFERENCE GROUP	34
APPENDIX E: NACI PANELS OF EXPERTS FROM AUGUST 2012 TO DATE	35
MEMBERS OF THE MONITORING, EVALUATION & INDICATORS PROJECT TEAM	35
MEMBERS OF THE NATIONAL INNOVATION FRAMEWORK PROJECT TEAM	35
MEMBERS OF THE STRENGTHENING SKILLS IN MATHEMATICS, SCIENCE & TECHNOLOGY PROJECT TEAM	35
MEMBERS OF THE INFRASTRUCTURE FOR RESEARCH DEVELOPMENT & INNOVATION PROJECT TEAM	36
MEMBERS OF THE BIOECONOMY POLICIES & STRATEGIES PROJECT TEAM	36
MEMBERS OF THE GENDER MAINSTREAMING PROJECT TEAM	37
LIST OF ACRONYMS	38



MESSAGE FROM THE MINISTER FOR SCIENCE AND TECHNOLOGY, THE HONOURABLE DEREK HANEKOM

As South Africa faces challenges of addressing unemployment and achieving steady economic growth, innovation has become a critical component of the growth and development discourse. At the core of our conversation is the reality that our country needs to explore competitive strengths beyond the primary sectors. NACI's benchmarking of the performance of the National System Innovation (NSI) against other systems globally shows uneven improvement in our system of innovation. While we have climbed five places on the Global Innovation Index, we have declined two places in the overall competitiveness of our economy.

The Global Innovation Index recognises the importance of innovation as a driver for economic growth and wealth creation. The 2013 Global Innovation Index Report not only casts light on international innovation ecosystems; it draws our attention to the fact that fostering innovation requires each country to explore local strategies that will deeply root innovation within its own comparative advantage, instead of emulating the success stories of other countries. Secondly, it echoes the need for a broad and horizontal vision of innovation which includes indicators beyond the traditional measures of research and development.



The Ministerial Review Committee Report on Science, Technology and Innovation Landscape in South Africa echoes these very sentiments. The report concludes that in order to create an impactful NSI, innovation must be seen as going beyond research and development for it to be pervasive and permeate Public Service delivery systems. The State's investment in innovation has historically been skewed towards supply-side measures such as big science, as opposed to demand-side measures such as creating an enabling environment for business and social development priorities. Of critical importance is that we begin to articulate a position, as the State, in relation to demand-side innovation policy. The most important would be to develop clear linkages between the SME sector's R&D, technology start-ups and innovation intensity, and the country's increasing investments in human capital development.

NACI's policy advice in the financial year has highlighted regulatory issues in the Bioeconomy environment and assisted the Department of Science and Technology (DST) to put together the National Bioeconomy Strategy. NACI continues to assist the DST to deepen the transformation agenda, particularly on gender equality in the Science, Engineering and Technology (SET) environment with a view to strengthening and diversifying the human capital base of SET.

NACI's advice has further confirmed that if South Africa is to drive competitiveness through innovation, significant improvements must be made on human capital formation in growth sectors and an accommodation of non-science and technology-based innovation in our policy agenda.

NACI has further highlighted the need to anchor all forms of innovation on social impact.

This brings me to a critical point about our choice of innovation policy instruments. Policy instruments need a certain degree of adaptability to be able to be customised to the changing needs of the national system of innovation. The recommendations made in the report of the Ministerial Review Committee on the Science, Technology and Innovation Landscape in South Africa on the nature of our policy instruments gives us an opportunity, in the year ahead, to reflect on our current institutional framework and its ability to coordinate a diverse NSI.

I extend my sincere gratitude to all members of the NACI Council for their keenness to serve an extended term, despite the trying nature of the past year. I am personally grateful to Dr Steve Lennon, Chairman of NACI who, at the helm of the Council has given it stability, strength and continuity. I believe NACI's achievements in the past year are testament to his leadership. Finally, I would like to extend my gratitude to all members of expert panels and the Secretariat whose dedication and support ensured the completion of the year's programme.



CHAIRMAN'S OVERVIEW

DR STEVE LENNON

I am very pleased to report that NACI has continued during the 2012/13 financial year to give the Minister of Science and Technology useful policy advice covering pertinent aspects of the National System of Innovation (NSI). However, persisting social, economic and environmental challenges confronting South African society in its entirety suggest a need for concerted efforts geared to developing innovative solutions to address these challenges. NACI therefore sees the launch of the National Development Plan (NDP), together with its targets, as a holistic solution to the challenges.

The NSI in its current form is expected to support the objectives of the NDP as it has already served the country in moving towards a knowledge economy. For instance, a number of strategies which include Biotechnology, Nanotechnology, Indigenous Knowledge Systems and Technology Stations Programmes were put in place as a result of its efforts. Those strategies have been implemented for some time now and so far most of them have resulted in the establishment of Centres of Excellence developing high-end skills and enhancing research and development capacity. The resultant initiatives have been attracting massive private sector investment. NACI therefore acknowledges that the current NSI is to some extent effective.

Although we feel that the system provides a solid platform, the OECD Review on Innovation Policy and the recent Ministerial Review on the Science, Technology and Innovation (STI) landscape have highlighted many critical gaps within the system, which include the following:

- Poor adoption across government departments of the vision of the NSI as articulated in the White Paper on Science and Technology.

- Fragmentation of innovation activities within the NSI.
- Limited role of business community (established and emerging enterprises).
- Short fall in human capital development, with more emphasis to dearth of artisans and technicians.
- Lack of programmes dedicated to supporting growth of small, micro and medium enterprises (SMMEs).
- Failure to cater for innovation in its broadest context.

NACI has traditionally assessed the health of the NSI using indicators on an annual basis, with the 2012/13 financial year being no exception. The indicators reported in this annual report also assessed the state of our system in relation to other countries in terms of various international indices during the period 2008/9 to 2011/12.

According to the Global Innovation Index, South Africa is doing fairly well in terms of innovation inputs as opposed to poor innovation outputs. With regards to the Knowledge Economy Index, South Africa ranked considerably higher in the area of economic incentive regime, while falling several places in the areas of innovation, education and ICT. In the Global Competitiveness Index South Africa did well in terms of quality of institutions, goods market efficiency and financial market development. However, South Africa ranked notably low in the areas of infrastructure, labour market efficiency, technological readiness, health and primary education, business sophistication, innovation, higher education and training and macroeconomic environment.

While these indices provide useful statistical information for benchmarking against international practices, there is a need to create opportunities for developing countries such as South Africa to actively influence their formulation

to represent local contexts that will shape indicators to give a true reflection of the system. This will ensure that appropriate policy actions are implemented to address specific weaknesses within the system. Already NACI has embarked on developing a new package of indicators which could measure the true performance of the system in terms of the impact of innovation on quality of life, economic growth, environmental sustainability and entrepreneurship.

While the gaps within the NSI are notable, we feel that the system could do a lot more to facilitate the realisation of the following broad intentions of the NDP:

- The NDP calls for innovation across all sectors and is not solely confined to innovation in Science and Technology, but innovation in its broadest context.
- The concept of Innovation pervades every facet of the NDP. In fact, the success of the NDP require high levels of Innovation from Government just to “untangle” all the obstacles that are in the way for the NDP to achieve even a modicum of success.
- There is a need to increase the participation of the private sector to enable the system to provide meaningful support for the development of SMMEs.
- A need for an NSI framework fully inclusive of government departments and multi stakeholder groups including citizens; serving innovation across all sectors to achieve the broader objectives of the NDP.
- In order to achieve the objectives for a broader innovation framework a new NSI would have to be formulated which is fully inclusive of all government departments, serving innovation across all sectors and multiple stakeholder groups which include at its core the citizens of the state.

The visible misalignment between the NDP’s targets and the current capacity of the system warrants a reformation of the NSI into a functional framework positioned to unleash a collective national effort. As part of the solution to this misalignment, NACI’s 2013/14 projects within the strategic areas, Coherence and Coordination in the NSI, Skills, Gender Mainstreaming, Bioeconomy and the Innovation for Economic Development and Social Upliftment, have been planned to address a number of key objectives that include the following:

- To assess in detail the current state of the NSI and identify gaps.
- To analyse key elements required for supporting the NDP.
- To identify key strategic initiatives and design models to close the gaps.

NACI’s projects are therefore expected to propose some strategic interventions. Such interventions are supposed to give some guidance on what all role players of the NSI

should do differently to ensure effective roll-out of the National Development Plan’s intentions. I am very confident that the work of NACI to be undertaken during the 2013/14 financial year will propose implementable recommendations that will redress most of the identified gaps within our NSI. I also believe that with a reformed NSI, South African government will be able to provide optimal responses to most of its economic, social and environmental challenges and opportunities.

As the term of the current NACI Council comes to an end, more focus will be on preparing the last batch of policy advice based on the current research work which is being finalised. Reflecting on a holistic work of NACI executed over many years, I have no doubt in my mind that NACI’s performance in terms of generating meaningful policy advice for use by the Ministers of Science and Technology has been immense. However, the impact of such advice is not apparent as the feedback for its use by the Department of Science and Technology has not been proactive. According to an unpublished NACI report, the underlying cause is that most senior officials who are responsible for implementing advice do not have access to it. Therefore, the Council will solely dedicate the remaining period of its tenure to continue tracking the implementation of a host of advice presented to previous and current Ministers of Science and Technology.

It must be noted that NACI’s achievements during the 2012/13 financial year would not have been possible if it were not attributed to the immense support that we received from our current and former Ministers of Science and Technology, Mr Derek Hanekom and Ms Naledi Pandor, respectively.

I would like to thank the NACI Council together with its Project Team Leaders who worked tirelessly in providing their expertise and knowledge that enabled us to develop sound policy advice. I would also like to extend my gratitude to the Project Teams, NACI Secretariat and the former NACI Committees for their diligent contributions in undertaking evidence-based research that informed the development of policy advice.

Last, but certainly not least, I do acknowledge the leadership of the former CEOs of NACI, Professor Krish Bharuth-Ram and Ms Kelebogile Dilotsothle, for providing excellent service and strategic support to the Council. They also played a pivotal role in ensuring a smooth transition from NACI’s committees’ mode of operation into a project teams’ approach.

INTERNATIONAL BENCHMARKING OF THE SOUTH AFRICAN NATIONAL SYSTEM OF INNOVATION

Introduction

This section assesses the progress of the South African National System of Innovation in relation to other countries across the world by focusing on international rankings of key indices, sub-indices, pillars and relevant individual indicators. The main indices chosen for the purpose of this benchmarking are the Global Innovation Index, the Knowledge Economy Index and the Global Competitiveness Index. These indices are useful due to their international coverage, ability to aggregate a large number of indicators to a single composite value as well as the fact that they are premised on well constructed methodologies.

The Global Innovation Index study conducted by INSEAD and its partners, serves as a useful tool for tracking the level of a given country's investment in innovation as well as that of innovation outputs. Monitoring of innovation outputs is crucial as the ultimate goal of innovation is to utilise its outputs to improve the quality of life, wealth creation and environmental sustainability. The Knowledge Economy Index produced by the World Bank quantifies the progress of world economies on the use of knowledge capital in producing goods and services. Lastly, the Global Competitiveness Report which is produced by the World Economic Forum examines factors that are attributable to some countries' sustained economic growth and long-term prosperity, innovation is one of such factors.

Global Innovation Index

The 2011/12 Global Innovation Index (GII) ranks South Africa in position 54 out of a total of 141 countries. However, when comparing South Africa's innovation performance against the performance of emerging economies such as the BRICS (table 1), the country takes position 3, just above Brazil and India. If one analyses the 2008/09 to 2010/11 rankings, we conclude that South Africa has been slipping in GII ranking. The 2011/12 GII report shows that South Africa's position slightly improved.

Table 1: BRICS countries ranking on Global Innovation Index

	2008/09	2009/10	2010/11	2011/12
South Africa	43	51	59	54
Brazil	50	68	47	58
India	41	56	62	64
Russia	68	64	56	51
China	37	43	29	34

The GII is an average of innovation inputs and outputs indices, where the country in 2011/12 is ranked 45 on innovation inputs index and 73 on innovation outputs index (table 2 and 3). The main contributors to a better ranking on innovation inputs are the indicators such as good investment environment (market capitalization as % of GDP; total value of stocks traded as % of GDP; and the strength of investor protection) and availability of credit (easy of getting credit and domestic credit to private sector as % of GDP).

Table 2: rankings on innovation input sub-index

	2008/09	2009/10	2010/11	2011/12
South Africa	38	35	40	45
Brazil	54	69	68	69
India	49	54	87	96
Russia	76	82	59	60
China	47	67	43	55

Table 3: rankings on innovation output sub-index

	2008/09	2009/10	2010/11	2011/12
South Africa	50	99	83	73
Brazil	39	73	32	52
India	34	69	44	40
Russia	60	51	50	49
China	29	31	14	19

The highly ranked South African science and technology (S&T) based innovation inputs indicators with the latest rankings are royalty & license fees payments as percentage of GDP (14th), % of R&D performed by business (24th), university & industry research collaboration (25th), % of high-tech imports (28th), quality of scientific research

institutions (29th) and % of R&D financed from abroad (30th). The lowest ranked S&T based innovation inputs areas are % gross tertiary outbound enrolment (137th), information & communication technologies access (94th), GMAT mean score (92nd) and information & communication technology usage (90th). Mean GMAT score serves as a proxy indicator for the country's management capability.

The innovation outputs areas that are globally ranking high are the computer software spending as % of GDP (14th) and the domestic resident trademark registration (25th). The low ranking innovation outputs for South Africa are the number of video uploads on YouTube per population (108th), % of computer & communication services exports (106th), Wikipedia monthly edits per population (99th), ICT & organisational model creation (94th) and % of creative goods exports (92nd).

Knowledge Economy Index

As shown in table 4, South Africa used to be the best knowledge based economy among the BRICS countries in 1995. With the latest data available, the country is now the 3rd, below Russia and Brazil. The pillars of Knowledge Economy Index (KII) are Economic Incentive Regime, Innovation, Education and ICT. The declining position of South Africa as the knowledge based economy is mainly due to the ICT pillar which decreased from position 51 in 1995 to 55 in 2000 and on the latest available data it is ranked at 98 (table 5).

Table 4: BRICS countries ranking on Knowledge Economy Index

	1995	2000	Most Recent Year
South Africa	51	52	67
Brazil	71	59	60
India	106	104	110
Russia	59	64	55
China	100	91	84

Table 5: South African rankings on Knowledge Economy Index pillars

	1995	2000	Most Recent Year
Economic Incentive Regime	92	62	64
Innovation	34	41	44
Education	54	76	81
ICT	51	55	98

The ICT pillar for the purpose of KII is made up of the indicators such as the total number of telephones access per capita, number of internet users per capita and the number of people who have access to computers per capita. While the decline in international ranking is worrying, a caution need to be taken that the most recent data for the number of telephone access and total number of internet users is for 2009 while the data for people with the access to computers is that of 2008.

The innovation pillar is based on S&T driven innovation with the indicators such as number of publications & patents per population; and royalty payments & receipts per population. The economic incentive regime pillar is also made up of three indicators, which are tariff & non-tariff barriers; regulatory quality; and rule of law. The indicators used on education pillar are average years of schooling, gross secondary enrolment and gross tertiary enrolment.

Global Competitiveness Index

As it is a case with GII and KII, South Africa is reasonably competitive among the BRICS member countries on Global Competitiveness Index (GCI) ranking as shown in table 6. Further analysis down to the three sub-indices and 12 pillars is shown in table 7.

Table 6: BRICS countries ranking on Global Competitiveness Index

	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
South Africa	45	45	54	50	52
Brazil	64	56	58	53	48
India	50	49	51	56	59
Russia	51	63	63	66	67
China	30	29	27	26	29

Table 7: South African ranking on sub-indices and pillars on Global Competitiveness Index

	2008/09	2009/10	2010/11	2011/12	2012/13
Basic Requirements	69	77	79	85	84
Institutions	46	45	47	46	43
Infrastructure	48	45	63	62	63
Macroeconomic environment	63	68	43	55	69
Health & primary education	122	125	129	131	132
Efficiency Enhancers	35	39	42	38	37
High education & training	57	65	75	73	84
Goods market efficiency	31	35	40	32	32
Labour market efficiency	88	90	97	95	113
Financial market development	24	5	9	4	3
Technological readiness	49	65	76	76	62
Market size	23	24	25	25	25
Innovation & Sophistication Factors	36	39	43	39	42
Business sophistication	33	36	38	38	38
Innovation	37	41	44	41	42

The GCI incorporates nearly similar indicators as the GII, but they differ on how they are arranged into pillars and sub-indices. This is evident by South Africa's GII ranking of 54 in 2011/12 and GCI ranking of 50 during the same reporting period. Technological readiness pillar affords the opportunity to assess the state of technological progress for the country, which has shown great improvement from 2011/12 to 2012/13, moving 14 places to 62. The innovation pillar has stabilized over the years, a trend different from

what is observed on the GII where there is a decline in innovation inputs ranking and improvement on innovation outputs. The innovation pillar on GCI is composed of S&T based indicators such as the quality of scientific research institutions, company spending on R&D, university-industry collaboration in R&D, capacity for innovation, government procurement of advanced technology products, availability of scientists & engineers and total number of patents applications per population.

Discussion

The information from the rankings on three main international indices shows useful information regarding South African innovation model, which it appears to be perfectly non-linear. Good progress is made by the country on the current R&D capacity although this capacity competes with the imported know-how as evidenced by high royalty and license fees payments as percentage of GDP. ICT is one of the enablers of technological progress and South Africa is relying more on the tried-and-tested software products from international sources as indicated by a high ranking on the amount of computer software spending as a percentage of GDP. Practice of software outsourcing and the lack of access to broadband internet might potentially be the cause for South African's lack of online creativity and low percentage of computer and communication services exports.

It is no doubt that the South African technological progress is creating the quality of life and wealth creation through the imported know-how combined with efficient goods

and financial market. Business sophistication and quality of scientific research institutes promotes knowledge absorption and much needed innovation linkages.

Due to insufficient data used on education statistics (human capital), it is impossible to fairly assess the National System of Innovation's progress in developing the current and future human capital (pipeline). The estimated rankings (Box 1) fairly represent significant progress done with regard to science, engineering and technology (SET) training, with the SET graduation rate indicator ranking the 16th. The attractiveness of the South African tertiary education system should rank at 20th with the system having 7.41% of tertiary inbound mobility, of which approximately 50% of such students being from SADC countries. The low school life expectancy rate and percentage gross tertiary enrolment indicates the need to encourage further learning beyond basic education among the South African youth

Box 1: Issues with insufficient human capital data on Global Innovation Index 2012

There are only 3 indicators for human capital out of the possible 8 (excluding PISA data) on GII report for South Africa. NACI is of the opinion that the missing data makes it impossible to benchmark the country correctly. INSEAD sources the human capital data from the UNESCO Institute of Statistics, of which the South African data on human capital was not included. NACI gathered the missing data from publicly available information to estimate the correct ranking on basic and tertiary education and then estimated the

overall human capital and research pillar. The estimates were done by replicating the GII normalisation and aggregation methodology for consistency and the resulting ranking on tertiary education sub-pillar shows drastic improvement from rank 141 to 69 while there is a slight drop in ranking for basic education from 71 to 86. The estimated ranking for the human capital and research pillar also improves drastically from 103 to 67.

Table A: Correction of human capital and research pillar data for 2012 GII rankings

	Current Ranking		NACI Estimated Ranking		
	Score (0-100) or Actual Value	Ranking	Missing Value	Score (0-100) or Actual Value	Ranking
Human Capital & Research	27.2	103		36.1	67
Education	51.4	71		46	86
Current expenditure on education, % of GNI	5.4	29		5.4	29

	Current Ranking		NACI Estimated Ranking		
	Score (0-100) or Actual Value	Ranking	Missing Value	Score (0-100) or Actual Value	Ranking
Public expenditure/ pupil, % GDP/cap	n/a	n/a	17.6 ^a	25.76	78
School life expectancy, years	n/a	n/a	13.1 ^b	55.46	69
PISA scales in reading, math & science	n/a	n/a		n/a	n/a
Pupil-teacher ratio, secondary	25	112		25	112
Tertiary Education	0.7	141		32.9	69
Tertiary enrolment, % gross	n/a	n/a	16.3 ^c	15.1	97
Graduates in science & engineering, %	n/a	n/a	27.8 ^d	60.46	16
Tertiary inbound mobility, %	n/a	n/a	7.41 ^d	56	20
Gross tertiary outbound enrolment, %	0.1	137		0.1	137
Research & Development	29.5	43		29.5	43
Researchers, headcounts/ million population	820.7	60		820.7	60
Gross expenditure on R&D, % GDP	0.9	35		0.9	35
Quality of scientific research institutions	61.1	29		61.1	29

Data Sources:

a* The World Bank, <http://data.worldbank.org/indicator>

b* UNDP (2013), Human Development Report 2012

c* Department of Education (2009), Trends in Education Macro-Indicators: South Africa

d* Council for Higher Education (2012), Vital Stats Public Higher Education 2010

Conclusion

For South Africa to improve towards a knowledge based economy, significant progress needs to be made on human capital development, ICT infrastructure and non-S&T based innovation. The country is making progress in positioning itself as an innovation driven economy although significant progress is needed to market the local S&T capability as the

preferred innovation source for production of goods and services. This role cannot be performed by a single actor but it requires efforts from science councils, universities, SMMEs, state owned enterprises, large firms, venture capitalists and the government. NACI's analysis confirms the continued existence of the innovation-chasm which is evident by promising innovation capacity and persistent technological outsourcing.

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:

- 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; and
- The funding of the science and technology system in respect of its contribution to innovation.

Mission Statement:

NACI's mission is to become the premier advisory body to the Minister for Science and Technology and to Government on innovation matters, including:

- the contribution of innovation to economic competitiveness;
- the contribution of innovation to economic development and social upliftment; and
- 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 scientific approaches of 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 of development and an enabler for the country's participation in the global knowledge society.

Values:

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

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

Corporate Objectives:

NACI had set itself six corporate objectives for the financial year 2012/13. These were:

- i. Engaging with the Minister on the NACI Act, so that the implications to NACI of the Science and Technology Laws Amendment Act 2011 and recommendations of NACI Review Panels set up by the previous Ministers for Science and Technology in 2008 and 2012 respectively, are put into effect;
- ii. Engaging with the Minister on key issues to be addressed during the financial year 2012/13;
- iii. Establishing Project Teams - in terms of section 8(4) of the Act - with defined objectives and outcomes around identified key issues;
- iv. Initiating partnerships with policy researchers at universities and science councils, in order to secure their participation on a shared appointment basis within Project Teams working together with NACI staff;
- v. Co-funding the establishment of a research chair or centre of excellence in innovation policy development; and
- vi. Pursuing the establishment of a central database of innovation knowledge provision through the national repository for data, information and analytical reports on relevant topics and initiatives.

During the year under review, corporate objectives (i-iii) were successfully implemented:

Following amendments to the Science and Technology Laws Amendment Act, the position of the NACI CEO was subsequently created by the Department and filled on a contract basis. The NACI Council engaged with the Minister in August 2012 on strategic priority areas, which, if successfully pursued by NACI, will add immense value to growth in the national system of innovation and the country. The Minister approved the five strategic priorities of NACI, namely: monitoring, coherence and coordination; strengthening skills and infrastructure for research and innovation; bioeconomy policies and strategies; innovation for economic development and social upliftment; and gender mainstreaming. In addition, the Minister approved that NACI move away from standing advisory committees to establish project linked expert panels (project teams). NACI successfully put into operation seven panels with expertise to support the strategic focus areas mentioned above in October 2012.

COMPOSITION OF NACI

As a statutory advisory council, NACI is governed by a Council, constituted as a board of directors. Operationally, the organisation consists of an executive committee (EXCO) and panels of experts appointed as project teams. The administrative arm of the organisation is the NACI Secretariat.

NACI Council:

The Council is led by a chairperson appointed by the Minister and comprises of 16-22 members who are also appointed by the Minister after consultation with Cabinet. The Council is broadly represented in sectors including government departments, the academia, business sector, and science councils. Members of Council serve in office for 4 years with the possibility of extension as may be determined by the Minister.

NACI ExCo:

The Executive Committee is nominated from amongst the members of Council and includes the chief executive officer (CEO). EXCO takes decisions on the operations of NACI, ensures the execution of instructions and directives from Council and matters attendant therewith.

Project Teams:

Project Teams are constructed as panels incorporating lead experts from the academia, science councils, government, civil organisations and industry. Project Teams direct and carry out pertinent research on topics agreed to with the Council and related to priority issues. Individual experts 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 13 officials, who are employees of the Department of Science and Technology. The Secretariat is an administrative arm of Council on all matters pertaining to project management, research and policy advisory services.

NACI ACTIVITIES, PERFORMANCE AND OUTPUTS

During the period under review, NACI migrated from a system of long-standing committees, to the establishment of panels of experts called project teams. Through the project teams approach NACI sought to do better business planning, create synergies and enhance efficiency of output. Broadly, the outcomes are:

- All projects undertaken by NACI are now centred on key issues agreed to with the Minister.
- NACI met with former Minister Pandor and agreed on thematic areas, namely: Monitoring, Coherence and Coordination of the NSI; Strengthening Skills and Infrastructure for research development and innovation; Bioeconomy policies and strategies; Innovation for economic development and social upliftment; and Gender mainstreaming in the science, technology and innovation environment.
- Business planning is focused on the strategic issues above; NACI has done away with committee mandates and committee plans. NACI now operates as a single entity, refocused towards delivering on national objectives.
- Meetings are impact and output driven resulting in a reduction in the cost of meetings and allowing savings to be channeled to projects.

Seven (7) specialised panels of experts are responsible for research and policy analysis. The panels provide a pool of expertise serving on project teams which are then commissioned to perform specific tasks on a project linked basis for periods when the expertise is required. Policy recommendations flowing from expert panels are given due consideration by EXCO and approved by Council. Project Teams became functional during the latter part of the reporting year, therefore for purposes of reporting, the work of the previous committees has been consolidated with the outputs of the project teams.

MONITORING, COHERENCE AND COORDINATION OF THE NSI

Delivery on Monitoring, Coherence and Coordination of the NSI encompasses two policy focus areas namely, Monitoring, Evaluation and Indicators and the development of a National Innovation Framework.

Policy thrust 1: Monitoring, Evaluation and Indicators

The Monitoring, Evaluation and Indicators builds on the work of the previous committee, that is, the Indicators' Reference Group (IRG). Under this policy thrust NACI gathers policy intelligence based on which a comprehensive view of the national system of innovation is provided annually. Work covered in this area includes monitoring South Africa's technology balance of payments; evaluating venture capital mechanisms for innovation oriented R&D investments; and publishing the South African Science and Technology Indicators' report.

During the period under review, three new projects were initiated, namely:

- i. Conceptualising the assessment of the South African science, technology and innovation indicator system. The project assessed STI data that forms the basis for STI indicators.
- ii. The Innovation Portal. The portal is geared towards:
 - providing an information storage facility with capabilities for information sharing between NACI and all innovation stakeholders;
 - eliminating fragmented information and reducing duplication of research aimed at similar outcomes; and
 - providing a platform for data, reports, analyses and discussions to enhance organisational functioning and achievement of strategic objectives.

The approved conceptual framework for the portal was transferred to the Department of Science and Technology for implementation.

- iii. The South African Science and Technology Indicators' publication. This booklet, published annually, provides statistical analysis on the performance of the science

system. The booklet was put on hold (not published) in the year under review as NACI initiated a process of improving content and strategic focus.

- iv. In addition, and as part of NACI's oversight mandate over the NSI, a review analysis of global knowledge economy indicators was undertaken with a view to understanding the implications of the global STI indicators for South Africa's development. Whilst there is no doubt on the value of international benchmarking using international indices such as the Global Innovation Index, NACI is concerned that the statistical data often relied upon is not accurate, leading to a misleading picture of the country's innovation capability (refer to NACI's analysis of human capital in box 1 above).

Policy thrust 2: Development of a National Innovation Framework

The National Innovation Framework is a new focus area of NACI. In the context of this focus area NACI has initiated a research study which will culminate in a National Innovation Framework and guide the country's investments in innovation moving forward:

- i. The National Innovation Framework for the NSI

In addition, the innovation framework will provide a platform for coordination and coherence in the work of all innovation stakeholders, beyond just the science system as has traditionally been the case.

STRENGTHENING SKILLS AND INFRASTRUCTURE FOR RESEARCH DEVELOPMENT AND INNOVATION

Delivery on Strengthening Skills and Infrastructure for Research Development and Innovation encompasses two policy focus areas namely, infrastructure for research and innovation and strengthening skills in mathematics, science and technology.

Policy thrust 3: Infrastructure for Research and Innovation

Infrastructure for Research and Innovation is a new strategic focus area of NACI. Under this policy thrust a research study has been initiated to review current infrastructure for research and innovation. The review process which commenced in the period under review will culminate in a road map of the state of infrastructure for research and innovation in the country. Below is a list of recent work already done which will be instrumental in informing this review:

- i. The State of South Africa's Infrastructure: Opportunities and Challenges 2012;
- ii. The Higher Education South Africa Infrastructure study 2012;
- iii. The National Survey of Research and Experimental Development 2009/2012, published by the DST and HSRC;
- iv. The National Survey of Research and Experimental Development 2012/2011, published by the DST and HSRC;
- v. The State of Research Development in South Africa: Towards Best Practice; and
- vi. A Study to Review and Evaluate the roll-out progress of the National Equipment Programme (NEP) and the National Nanotechnology Equipment Programme (NNEP) 2011, published by the NRF.

Policy thrust 4: Strengthening Skills for Mathematics, Science and Technology

The skills development work builds on the work of the former NACI Skills Task Team. In this policy thrust, NACI assesses trends in the country's human capital investments. Work done in this area has covered: An Assessment of Funding Instruments for Science, Engineering and Technology Human Capital; Monitoring and Evaluation Mechanisms for Human Capital; and Graduate Placement Programmes.

During the period under review NACI delivered policy advice on:

- i. The need for an integrated information management system or repository to provide data on the demand for skills (the gap) in the country. NACI's research confirmed the existence of disparate databases that collect either

demand side or supply side information. An urgent need exists for a centralized system to inform the country of the extent of the skills' gap in various sectors.

- ii. A delicate balance to be maintained in skills development to ensure the country does not only pursue high-end skills in a vacuum and without due regard for industry demand for intermediate skills, thus leaving large numbers of unemployed citizens.
- iii. The need to revisit the SETA model to ensure that SETA functions optimally in providing demand side and supply side data on skills.
- iv. The scaling up of PhD production to be tallied to industry demand and government programmes.
- v. Real coordination to occur between the Department of Higher Education and Training and the Department of Science and Technology in funding the Higher Education sector to avoid duplication of resources with a view to improving government's return on investment.

BIOECONOMY POLICIES AND STRATEGIES

Policy thrust 5: Bioeconomy Policies and Strategies

The Bioeconomy Policies and Strategies thrust is a continuation of the work of the former National Biotechnology Advisory Committee (NBAC), albeit with a slightly expanded focus. In this policy thrust NACI gathers intelligence on the progress the country is making in the Bioeconomy sector. Work conducted on Bioeconomy Policies and Strategies includes: Genomic Sovereignty in South Africa; Public Understanding of Biotechnology by the Media; Basic Research and Biotechnology Incentives; Bioethics in Research; the Implications of the Genetically Modified Organisms Act; Biotechnology and Food Security; etc.

During the period under review NACI completed research on:

- Bioprospecting South Africa's Biodiversity;
- Intellectual Property in the context of Biotechnology;
- NACI Research Ethics Clearance Checklist;
- NACI input to the TIA Review Panel; and
- Inputs to the DST's Bioeconomy Strategy

Policy advice on the Bioeconomy advocated for:

- i. Improved reporting on Biotechnology by the South African media, in particular the print media;
- ii. Review of the appeals process in terms of the GMO Act. The appeals process is lengthy, leading to de facto and threatened loss of major funding for the development of new and improved crops;
- iii. Increased funding and incentives for basic research in biotechnology as the sector is an area of strategic competitive advantage to South Africa;
- iv. National legislation to be put in place to regulate and monitor the flow of genetic/genomic material into and out of the country.

INNOVATION FOR ECONOMIC DEVELOPMENT AND SOCIAL UPLIFTMENT

Policy thrust 6: Innovation for Economic Development and Social Upliftment

The Innovation for Economic Development and Social Upliftment policy thrust is a continuation of the work of the former innovation for economic development committee (INNO4DEV) of NACI, albeit with an expanded focus. In this focus area NACI gathers intelligence on existing impactful models for all forms of innovation that can effectively address socio-economic challenges and opportunities. During the period under review, NACI completed research projects as outlined below:

- Proceedings on practical ways to enhance upscaling and uptake of promising broad-based innovation which has potential to enhance economic development and social upliftment
- Study report covering the assessment of gaps and challenges in policy instruments that support growth of innovation-based small, micro and medium enterprises (SMMEs) in South Africa.

GENDER MAINSTREAMING IN SCIENCE, TECHNOLOGY AND INNOVATION

Policy thrust 7: Gender Mainstreaming

The Gender Mainstreaming policy thrust is a continuation of the former SET for Women committee of NACI, albeit refocused broadly on gender as opposed to just women. In this focus area, NACI has mainly tracked the progression of women in science, engineering and technology as well as the challenges they face. Work completed in this area includes studies on: statistical trends of women's participation in SET; women's participation in key economic sectors such as agriculture and agro-processing; the recruitment of women in SET corporate environments; and good practice guidelines for promoting the participation of women in SET.

During the period under review, NACI completed research on:

- NACI input into the Women Empowerment and Gender Equality Bill.
- NACI input into the White Paper on Families

Policy advice delivered on addressing barriers for women in SET advocated for:

- i. A rigorous implementation of agricultural transformative policy in order to enhance the land ownership status of women. Equity in respect of farm ownership is a huge challenge.
- ii. An increase in the employment of women as R&D

workers particularly in areas of pronounced scarcity such as engineering and applied sciences.

- iii. Mechanisms to increase enrolments of female students, particularly Africans, at upper post-graduate level.
- iv. A transformative change in recruitment strategies of corporate organisations in order to bring about impactful transformation. Recruitment strategies tend to be more about attaining numerical parity within defective systems that do not bring about change.
- v. Stronger sanctions for violations of the Women Empowerment and Gender Equality (future Act) in order to put in place an effective redress regime, including compensation to be dispensed through the Equality Courts.
- vi. A healthy balance between welfare approaches that seek to remedy the imbalances of the past and nanny state approaches that will result in loss of self-reliance amongst citizens and ultimately poor economic participation.

INTERNATIONAL LIAISON

NACI's international collaboration has boosted NACI's profile in the 2012/13 financial year. NACI took part in several Organisations for Economic Cooperation and Development (OECD), science, technology and innovation (STI) workshops and meetings. Continued participation enables NACI to access a network of expertise which in turn enhances NACI's credibility through acknowledgement of its work internationally. In the year under review, NACI participated in the following international platforms:

Table B: International Liaison

EVENT	LOCATION	ATTENDEE	DATE
The 30 th session of the Working Party on Biotechnology (WPB) & the 20 th meeting of the Task Force on Industrial Biotechnology (TFIB)	Paris, France (OECD)	Dr N. Moleleki	06-09 June 2012
SSAJRP Bio-Tech Development Programme	Switzerland	Dr N. Galada	24-30 June 2012
The 31 st Session of the Working Party on Biotechnology (WPB) & the meeting of the Global Forum on Biotechnology	Paris, France (OECD)	Dr N. Moleleki	12-14 November 2012

LOCAL (EVENTS) STRATEGIC ENGAGEMENTS

As a policy advisory council, NACI often sets up platforms of engagement with local stakeholders on pertinent issues. These discussions strategically inform policy advice to the Minister and the rest of Cabinet. In the year under review, NACI hosted and attended the following workshops, seminars and conferences:

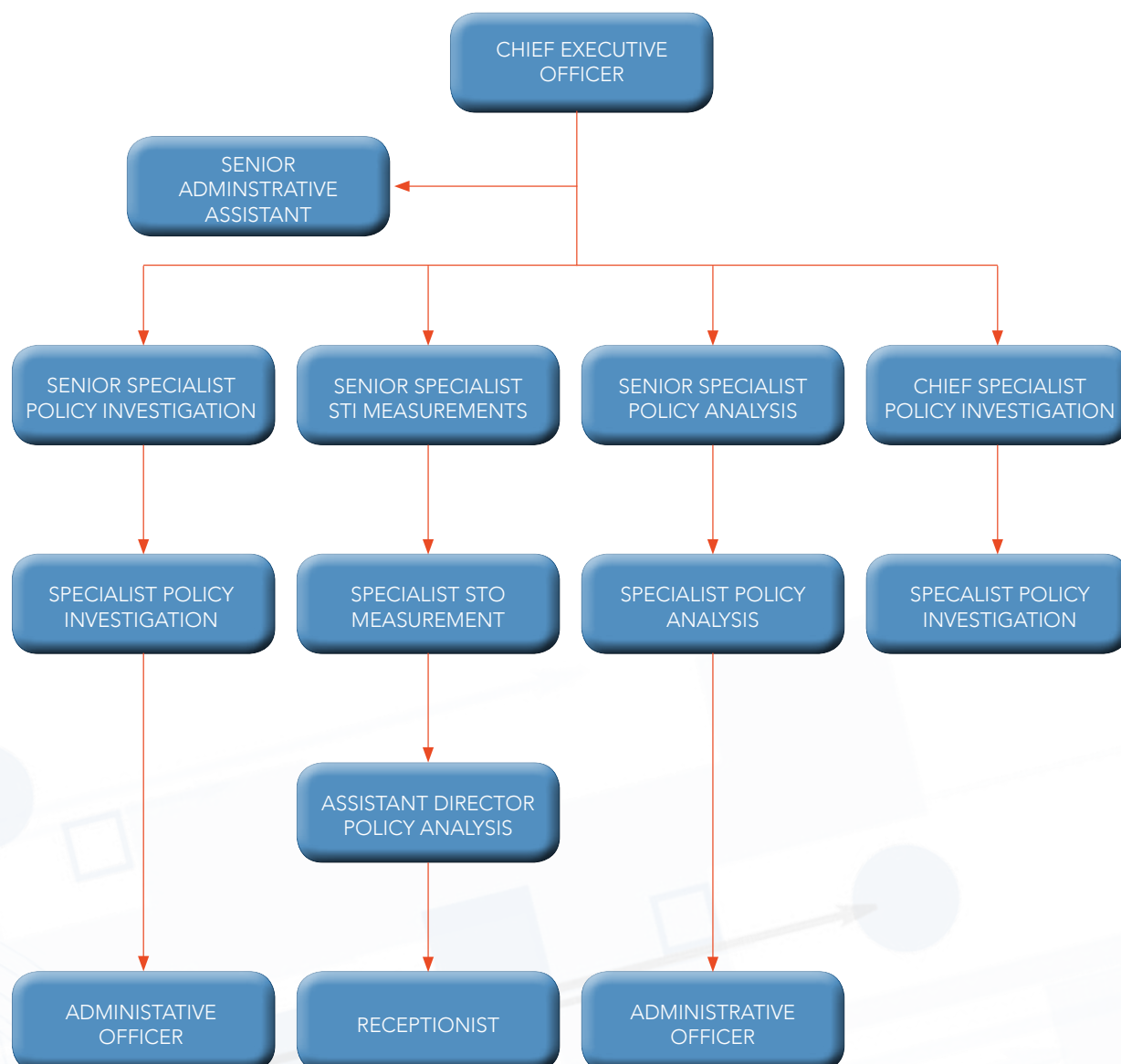
Table C: Local Strategic Engagements

EVENT	LOCATION	ATTENDEE	DATE
HESA Conference on Research and Innovation	CSIR Convention Centre	Ms Z. Roberts Dr N. Moleleki	03-04 April 2012
Strategic Breakaway to engage on the National Development Plan	Diep in die Berg	NACI Secretariat	24 April 2012
OEDC Think-Tank Meeting on Social Innovation	Department of Science and Technology	Dr T. Netshiluvhi	18 June 2012
SADC Women in SET, Consultative Meeting	Cape Town	Ms K. Dilotsotlhe	11-13 July 2012
Workshop with Minister on "the SET Gender Policy Framework"	Minister's Office Pretoria	NACI Chairman & SET for Women committee	03 October 2013
NACI Council's Presentation of Policy Advice to the Minister for Science and Technology	Minister's Office, Pretoria	NACI Chairman & Councillors	24 August 2012
OECD Conference on Innovation for Inclusive Development	Cape Town	Ms K. Dilotsotlhe	21 November 2012
Meeting with Dr E. W Colglazier (Advisor to Secretary of State Hilary Clinton on Science and technology)	Sheraton Hotel, Pretoria	Ms. K Dilotsotlhe	10 October 2012
Presentation of NACI inputs on the Women Empowerment & Gender Equality Bill	Department of Women, Children and People with Disabilities	NACI delegation led by Adv. Zondo Host: DWCPD	11 December 2012
NACI Biotechnology workshop: "Translational Research – from Laboratory to Industry"	Innovation Hub Auditorium	Biotechnology Community & NACI Stakeholders	20 February 2013
NACI Lunch Seminar on Biotechnology: "Translational Research- from Laboratory to Industry"	Enterprise Building, Innovation Hub	Biotechnology Community & NACI Stakeholders	21 February 2013
NACI Roundtable Discussion on "Strategies for Raising Awareness to Advance and Promote Innovation in the Public & Private sector"	Innovation Hub Auditorium	Social Innovation Community & NACI Stakeholders	1 March 2013

HUMAN RESOURCES

During the financial year 2012/13, NACI Secretariat comprised of a staff complement of 14 individuals including: a Chief Executive Officer, X 1 Chief Specialist, X3 Senior Specialists, X4 Specialists, X1 Assistant Director, X 2 Administrators, X1 Senior Administrative Assistant, and

X1 Receptionist. However NACI has not run on a full staff complement throughout the year, there are at least two vacant positions, due to staff mobility, at any given point in time.



FINANCIAL RESOURCES

As a non-listed entity, funding for NACI's operations comes from Programme 1 (Administration) in the Department of Science and Technology. Although NACI has a CEO, who is an Accounting Officer in terms of the Public Finance Management Act (PFMA), NACI does not have a corporate services function, therefore the budget and human resources functions are administered by Programme 1 at the Department of Science and Technology. NACI's budget for 2012/13 was R15 544 410.00 of which NACI expended R11 741 431. See Table below:

Economic Classification	Main Appropriation	Shifting Of Funds	Virement	Final Appropriation	Actual Expenditure	Savings/ Excess
	R'000	R'000	R'000	R'000	R'000	R'000
Compensation Of Employees	7,565	-	-	7,565	6,735	831
Goods And Services	7,979	(96)	-	7,883	4,895	2,988
Interest And Rent On Land	-	24	-	24	11	13
Machinery And Equipment	-	72	-	72	100	(28)
Transfers And Subsidies	-	-	-	-	-	-
Thefts & Losses	-	-	-	-	-	-
Total	15,544	-	-	15,544	11,741	3,804

GOVERNANCE REPORT

MEETINGS:

NACI Council, ExCo and Committee meetings 2012 - 2013¹

Members	Council (6)	ExCo (5)	INNO4DEV (2)	NBAC (2)	IRG (1)	SET4W (1)
Dr Steve Lennon	6	5				1
Mr Kuseni Dlamini	2		1			
Dr Azar Jammine	5		0			
Prof Helen Laburn	2					
Prof Lineo Mazwi-Tanga	3		2			1
Prof Michael S Pepper	4			2		
Prof Francis Petersen	3		2		0	
Prof Mamokgethi Phakeng	1					
Prof Gerhardus Prinsloo	5		1		1	
Mr Geoff Rothschild	5	5	1			
Prof Jennifer Thomson	4			2		
Ms Nkuli Shinga	2	5				
Adv Louisa Zondo	4					1
Ms Jayshree Naidoo			1			
Dr Gatsha Mazithulela				0		
Dr Sagadevan Mundre				1		
Prof Henk Huismans				2		
Prof Ames Dhai				2		

Members	Council (6)	ExCo (5)	INNO4DEV (2)	NBAC (2)	IRG (1)	SET4W (1)
Prof Jocelyn Webster				0		
Dr. Hennie Groenewald				2		
Mr McLean Sibanda				2		
Dr Antonel Olckers				1		
Ms. Kelebohile Lekoape				2		
Prof JT Burger				2		
Mr Stanley Ntakumba					0	
Dr Romilla Maharaj						1
Dr Yolisa Pakela - Jezile						0
Ms Jacqueline Williams						1
Dr Mmantsae Diale						1
Ms Bridgette Gasa						1

¹(number) = Total number of meetings held; number = Total number of meetings attended by a member

Project Team Meetings 2012 - 2013¹

Members	Strengthening Skills (3)	Innovation for Economic development (2)	Gender Mainstreaming (2)	Bioeconomy (5)	Development of National Innovation (1)	Infrastructure (3)
Dr Steve Lennon					1	
Mr Kuseni Dlamini	3					
Dr Azar Jammie						
Prof Helen Laburn						
Prof Lineo Mazwi-Tanga			0			
Prof Michael S Pepper						

Members	Strengthening Skills (3)	Innovation for Economic development (2)	Gender Mainstreaming (2)	Bioeconomy (5)	Development of National Innovation (1)	Infrastructure (3)
Prof Francis Petersen		2		5		
Prof Mamokgethi Phakeng	0					
Prof Gerhardus Prinsloo						3
Mr Geoff Rothschild						
Prof Jennifer Thomson				5		
Ms Nkuli Shinga		1				0
Adv Louisa Zondo			2			
Ms Jocelyn Vass	0					
Prof Yunus Ballim	2					
Mr Guy Harris	0					
Ms Mpho Letlape	1					
Dr Vuyo Mahlati	1					
Mr Lumkile Mondli		0				
Dr Daphney Mayindi		1				
Dr Kate Phillip		2				
Mr Bongani Motsa		2				
Ms Ntebatse Matube			1			
Dr Romilla Maharaj			2			
Dr Mmantsae Diale			2			
Prof. Amanda Gouws			2			
Rev. Bafana Khumalo			1			
Mr Mclean Sibanda				3		
Dr Joe Mosala Molete				5		

Members	Strengthening Skills (3)	Innovation for Economic development (2)	Gender Mainstreaming (2)	Bioeconomy (5)	Development of National Innovation (1)	Infrastructure (3)
Dr Antonel Olckers				5		
Dr Francisca Mochaba				5		
Mr Patrick Tippoo				3		
Prof Melodie Slabbert				3		
Ms J Yawitch					1	
Prof David Kaplan					0	
Ms Jayshree Naidoo					0	
Dr Takalani Rambau					1	
Ms Zanele Monnagotla					0	
Prof Nelson Ijumba						2
Mr Ravindra Naidoo						1
Dr Zawadi Chipeta						1
Dr Mohammed Jeenah						2
Dr Vinesh Maharaj						1
Dr Limenako Matsoso						1
Dr Zeblon Vilakazi						2
Dr Oswald Franks						1
David Phaho						0
Dr Bernard Nthambeleni						2

¹(number) = Total number of meetings held; number = Total number of meetings attended by a member

Governance of Information Technology:

In terms of its operations, the NACI Secretariat is located within the Department of Science and Technology. As a result, information incidental to NACI operations is filed with the Registry unit of the Department. Likewise the Secretariat has access to technological information management tools, such as Alfresco, which are at the disposal of the Department. It is worthwhile to indicate that the Department is, at present, piloting the implementation of Alfresco and current NACI filing is therefore manual. Of critical importance is that NACI must have access to IT infrastructure and IT tools and systems that are tailored to the needs of a national policy advisory body.

Sustainability:

Reviews of the National System of Innovation, including the recent report of the Ministerial Review Committee on Science, Technology and the Innovation Landscape in South Africa (2012), have highlighted important challenges for the organisation as a national instrument driving innovation policy in South Africa. NACI is seen as requiring a stronger legislative framework to enable it to perform effective oversight over the NSI. This should include but not be limited to an arms-length relationship from a single national department to an institution that is more accountable to parliament; enhancing the resources of the support structure to the policy advisory body (Council). To this end

NACI has concluded an agreement with the Academy of Sciences South Africa (ASSAf) to strengthen evidence-based reviews on key issues in the system. Furthermore, since credible evidence is a key dependency of the organisation's functional capability, NACI seeks to expand such collaboration to other research institutes in the NSI.

NACI moved to a new residence at the Innovation Hub in Pretoria, Gauteng, in September 2012. The move was precipitated by a more cost-effective lease. However on the whole, the organisation is currently pressed for increased human capital at the base along with expanded physical space and a budget congruent with its functions.

Compliance with Legislation:

NACI derives its mandate from the National Advisory Council on Innovation Act (Act No. 55 of 1997). The 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 complies with legislation pertinent to the operations of an organ of State e.g. the Public Finance Management Act, the Preferential Procurement Framework Act etc. There are no specific directives arising from a decision of a Court of Law with which NACI has to comply.

APPENDICES

APPENDIX A: COMPLETED RESEARCH, DESKTOP STUDIES POSITION PAPERS IN 2012/13

1.	NACI input into the Women Empowerment and Gender Equality Bill
2.	NACI input into the White Paper on Families
3.	Position Paper: Bioprospecting South Africa's Biodiversity
4.	Position Paper: Intellectual Property Awareness in Biotechnology
5.	Research Ethics Clearance Policy : NACI checklist on Biotechnology research
6.	Position Paper: The Role of Biotechnology in Food Security
7.	Assessment of Gaps and Challenges in Policy Instruments that Support Growth of Innovation-Based Small, Micro and Medium Enterprises (SMMEs) in South Africa
8.	International Benchmarking of the South African National System of Innovation.
9.	NACI input into the DST's Bioeconomy Strategy
10.	NACI input to the TIA Review Panel

POLICY ADVICE COMPLETED IN 2012/13

	TITLE	DATE DELIVERED TO MINISTER
1	Public Understanding of Biotechnology by the Media	24 August 2012
2.	Funding Basic Research in Biotechnology & Providing Incentives to Bioentrepreneurs	24 August 2012
3.	Problems Encountered with Delays in Appeals to Decisions made by the Executive Council of the GMO Act	24 August 2012
4.	Genomic Sovereignty	24 August 2012
5.	Addressing Barriers for Women in Science, Engineering and Technology	24 August 2012
6.	SET Gender Policy Framework	03 October 2012
7.	Information letter: The Role of Biotechnology in Food Security	24 August 2012

PROCEEDINGS REPORTS FROM WORKSHOPS & SEMINARS IN 2012/13

1.	Proceedings Report: Bioprospecting South Africa's Biodiversity
2.	Proceedings Report: Practical Ways to Enhance Up-Scaling and Uptake of Promising Broad-Based Innovation which has potential to enhance economic development and social upliftment.
3.	Proceedings Report: Strategies for Raising Awareness to Advance and Promote Innovation in the Public & Private Sector
4.	Proceedings Report: Translational Research - from Laboratory to Industry

APPENDIX B: MEMBERS OF NACI COUNCIL 2012/13

FULL NAME	ORGANISATION
Dr Steve Lennon	ESKOM Holdings SOC
Prof Krish Bharuth-Ram-Ram	CEO: NACI Secretariat (until July 2012)
Ms Kelebogile Dilotsotlhe	CEO: NACI Secretariat (until February 2013)
Mr Thulani Mavuso	Acting CEO: NACI Secretariat
Mr Kuseni Dlamini	New Bond Capital LTD
Dr Azar Jammie	Econometrix LTD
Prof Helen Laburn	Witwatersrand University
Prof Lineo Mazwi-Tanga	Cape Peninsula University of Technology
Prof Michael S Pepper	University of Pretoria
Prof Francis W Peterson	University of Cape Town
Prof Gerhardus Prinsloo	Durban University of Technology
Mr Geoff Rothschild	Johannesburg Stock Exchange
Prof Jennifer A Thomson	University of Cape Town
Prof Mamokgethi Phakeng	University of South Africa
Ms Nkuli Shinga	Department of Trade and Industry
Adv. Louisa Zondo	SASOL

APPENDIX C: MEMBERS OF THE EXECUTIVE COMMITTEE 2012/13

FULL NAME	ORGANISATION
Dr Steve Lennon	ESKOM Holdings SOC
Ms Nkuli Shinga	Department of Trade and Industry
Mr Geoff Rothschild	Johannesburg Stock Exchange
Prof Krish Bharuth-Ram-Ram	CEO: NACI Secretariat (until July 2012)
Ms Kelebogile Dilotsotlhe	CEO: NACI Secretariat (until February 2013)

APPENDIX D: NACI COMMITTEES FROM 2009 UNTIL AUGUST 2012/13

MEMBERS OF THE SET FOR WOMEN COMMITTEE

FULL NAME	ORGANISATION
Prof Lineo Mazwi Tanga (Chairperson)	Cape Peninsula University of Technology
Prof Nthabiseng Ogude	University of Pretoria
Dr Romilla Maharaj	National Research Foundation
Dr Yolisa Jezile Pakela	Agricultural Research Council
Ms Jacqueline Williams	Williams & Calmer
Dr Mmantsae Diale	University of Pretoria
Dr Bridgette Gasas	The Elilox PTY LTD
Adv. Louisa Zondo	SASOL

MEMBERS OF THE NATIONAL BIOTECHNOLOGY ADVISORY COUNCIL

FULL NAME	ORGANISATION
Prof Michael S Pepper (Chairperson)	University of Pretoria
Prof Sagadevan Mundree	Queensland University of Technology (Australia)
Ms Khungeka Njobe	Aveng Water
Prof Jennifer Thomson	University of Cape Town
Prof Henk Huismans	University of Pretoria
Prof Ames Dhai	Witwatersrand University
Dr Gatsha Mazithulele	National Research Foundation
Dr Hennie Groenewald	Biosafety South Africa
Dr Antonel Olckers	DNAbiotec PTY LTD
Mr Ben Durham	Department of Science and Technology
Mr McLean Sibanda	Technology Innovation Agency
Ms Kelebohile Lekoape	Bayer Cropscience RSA
Prof Johan Burger	University of Stellenbosch

MEMBERS OF THE NACI SKILLS TASK TEAM

FULL NAME	ORGANISATION
Dr Steve Lennon (Chairperson)	ESKOM Holdings SOC
Dr Albert van Jaarsveld	National Research Foundation
Prof Yunus Ballim	Witwatersrand University
Mr Geoff Rothschild	Johannesburg Securities Exchange
Dr Johannes Potgieter	Department of Trade and Industry

MEMBERS OF THE INNOVATION FOR DEVELOPMENT COMMITTEE

FULL NAME	ORGANISATION
Prof Francis Peterson(Chairperson)	University of Cape Town
Mr Geoff Rothschild	Johannesburg Stock Exchange
Dr Azar Jammie	Econometrix LTD
Prof Lineo Mazwi Tanga	Cape Peninsula University of Technology
Ms Jayshree Naidoo	Development Bank of Southern Africa
Prof Gerhard Prinsloo	Durban University of Technology

MEMBERS OF THE INDICATORS REFERENCE GROUP

FULL NAME	ORGANISATION
Prof Gerhard Prinsloo (Chairperson)	Durban University of Technology
Mr Stanley Ntakumba	Department of Performance Monitoring and Evaluation
Prof Francis Peterson	University of Cape Town
Dr Johannes Potgieter	Department of Trade and Industry
Mr Godfrey Mashamba	Department of Science and Technology

APPENDIX E: NACI PANELS OF EXPERTS FROM AUGUST 2012 TO DATE

MEMBERS OF THE MONITORING, EVALUATION & INDICATORS PROJECT TEAM

FULL NAME	ORGANISATION
Dr Azar Jammie (Project Team 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

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

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

MEMBERS OF THE DEVELOPMENT OF THE NATIONAL INNOVATION FRAMEWORK PROJECT TEAM

FULL NAME	ORGANISATION
Dr Steve Lennon (Project Team 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

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

FULL NAME	ORGANISATION
Mr Kuseni Dlamini (Project Team Leader)	New Bond Capital LTD
Ms Jocelyn Vass	Department of Trade and Industry
Prof Yunus Ballim	Witwatersrand University
Ms Mpho Letlape	Sasol Inzalo Foundation
Dr Vuyo Mahlati	International Women's Forum South Africa (IWFSa)
Prof Mamokgethi Phakeng	University of South Africa
Mr Guy Harris	Management Consultant

MEMBERS OF THE INFRASTRUCTURE FOR RESEARCH & 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
Ms Nkuli Shinga	Department of Trade & Industry
Dr Zeblon Vilakazi	iThemba Labs
Dr David Phaho	SASOL
Dr Ndanduleni B. Nthambeleni	National Research Foundation
Dr Oswald Franks	Engineering Council of South Africa

MEMBERS OF THE BIOECONOMY POLICIES & STRATEGIES PROJECT TEAM

FULL NAME	ORGANISATION
Prof Michael S Pepper (Project Team Leader)	University of Pretoria
Prof Helen Laburn	Witwatersrand University
Mr McLean Sibanda	The Innovation Hub
Dr Joe Molete	Council for Scientific & Industrial Research
Dr Antonel Olckers	DNAbiotec PTY LTD
Dr Francisca Mochaba	Ribotech PTY LTD
Mr Patrick Tippoo	The Biovac Institute
Prof Jennifer Thomson	University of Cape Town
Prof Melodie Slabbert	University of South Africa

MEMBERS OF THE GENDER MAINSTREAMING PROJECT TEAM

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

LIST OF ACRONYMS

BRICS	Brazil, Russia, India, China and South Africa (five major emerging national economies)
CEO	Chief Executive Officer
CSIR	Council for Scientific and Industrial Research
DFI	Development Finance Institution
DST	Department of Science and Technology
DWCPD	Department of Women, Children and People with Disabilities
EXCO	Executive Committee
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GII	Global Innovation Index
GMAT	Graduate Management Admission Test
GMO	Genetically Modified Organism
HESA	Higher Education South Africa
HSRC	Human Sciences Research Council
ICT	Information and Communication Technology
INNO4DEV	Innovation for Development
INSEAD	Institut Européen D'administration Des Affaires (European Institute Of Business Administration)
IRG	Indicators' Reference Group
IWFSA	International Women's Forum South Africa
KII	Knowledge Economy Index
LTD	Limited
NACI	National Advisory Council on Innovation
NBAC	National Biotechnology Advisory Committee
NEP	National Equipment Programme
NNEP	National Nanotechnology Equipment Programme
NRF	National Research Foundation
NSI	National System of Innovation
OECD	Economic Cooperation and Development
PFMA	Public Finance Management Act
PhD	Doctor of Philosophy
PISA	Programme for International Student Assessment (of the OECD)
PTY	Proprietary
R&D	Research and Development

S&T	Science and Technology
SADC	Southern African Development Community
SASOL	South Africa Synthetic Oil Liquid
SET	Science, Engineering and Technology
SETA	Sector Education and Training Authority
SMME	Small, Medium and Micro-sized Enterprise
SSAJRP	Swiss South African Joint Research Programme
STI	Science, Technology and Innovation
TFIB	Task Force on Industrial Biotechnology
TIA	Technology Innovation Agency
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WPB	Working Party on Biotechnology

An abstract graphic on a blue background featuring various hexagonal shapes, some solid white and some outlined. There are also faint, pixelated numbers like '23 3 35' and '5231' scattered across the upper right and middle sections. A large, bright, pixelated globe is visible in the background.

Ground Floor
Enterprise Building
Mark Shuttleworth Street
The Innovation Hub
Pretoria, 0087

Email
naci@dst.gov.za
Telephone
012 844 0252

The NACI Secretariat
Private Bag X894
Pretoria, 0001